EDUCATIONAL NUMBER

THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 48, No. 5 | 212 E. Ohio St., Chicago 11, Ill. | January, 1949

212 E. Ohio Street

Chicago 11 Illinois

This Month—Five New Books and a New Edition

Snyder's Obstetric Analgesia and Anesthesia

By FRANKLIN F. SNYDER, Harvard University. 401 pages, with 125 illustrations.

New—Ready January

Lyons & Woodhall's Atlas of Peripheral Nerve Injuries

By WILLIAM R. LYONS, Ph.D., California Medical College; and BARNES WOODHALL, M.D., Duke Medical School. 339 pages, with hundreds of illustrations on 135 plates, 16 in colors.

New—Ready January

Meleney's Clinical Aspects and Treatment of Surgical Infections

By FRANK LAMONT MELENEY, M.D., Columbia University. About 840 pages, with 287 illustrations.

New—Ready January

Crile's Practical Aspects of Thyroid Disease

By GEORGE CRILE, Jr., M.D., Cleveland Clinic. 355 pages, illustrated.

New—Ready January

DeGowin, Hardin and Alsever on Blood Transfusion

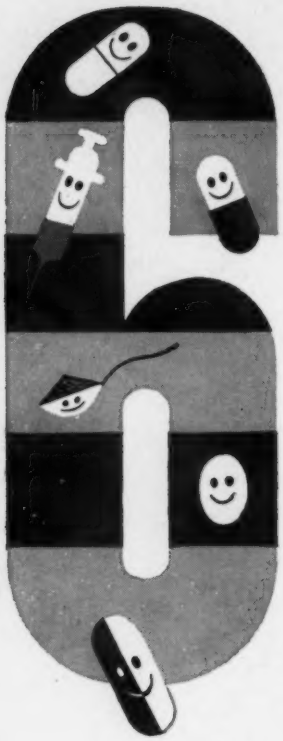
By ELMER L. DE GOWIN, M.D.; ROBERT C. HARDIN, Iowa State University; and JOHN B. ALSEVER, M.D., U. S. Public Health Service. 587 pages, with 200 illustrations. *New—Ready January*

Wiprud's Business Side of Medical Practice

By THEODORE WIPRUD, Executive Director and Secretary of the Medical Society of the District of Columbia. 232 pages, illustrated.

New (2nd) Edition—Ready January

W. B. SAUNDERS COMPANY West Washington Square, Philadelphia 5

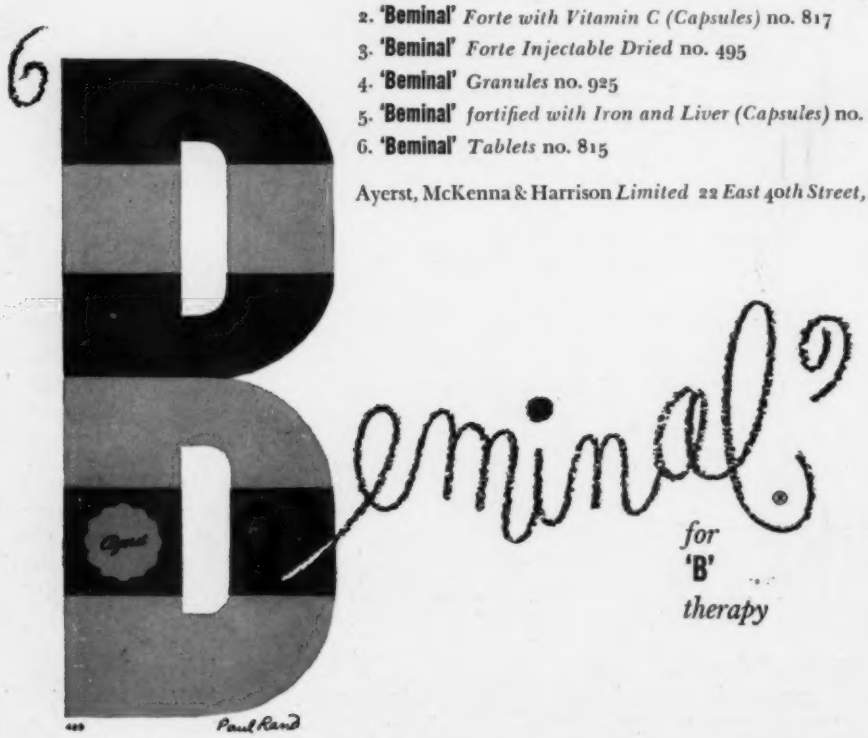


Six of a kind... *for* 'B' *therapy*

Now... with the addition of **'Beminal'** fortified with *Iron, Liver and Folic Acid*... the **'Beminal'** family offers six distinctive forms and potencies. **'Beminal'** fortified with Iron, Liver and Folic Acid will prove especially suitable in the prevention and treatment of iron-deficiency anemias, certain macrocytic anemias, and as adjunctive therapy in pernicious anemia. Beginning with the newest member, the following are the six dosage forms and potencies now available:

1. **'Beminal'** *fortified with Iron, Liver and Folic Acid (Capsules)* no. 82
2. **'Beminal'** *Forte with Vitamin C (Capsules)* no. 817
3. **'Beminal'** *Forte Injectable Dried* no. 495
4. **'Beminal'** *Granules* no. 925
5. **'Beminal'** *fortified with Iron and Liver (Capsules)* no. 816
6. **'Beminal'** *Tablets* no. 815

Ayerst, McKenna & Harrison *Limited* 22 *East* 40*th Street, New York* 16



FOR DEPENDABLE IMMOBILIZATION

"Specialist"®

HARD-COATED • PLASTER-OF-PARIS

BANDAGES

SPLINTS

Order from Your Dealer

Johnson & Johnson

CONTENTS, JANUARY, 1949

ORIGINAL ARTICLES—
The Management of Angina Pectoris As an Illustration of the Basic Principles of Therapy. L. C. Chandler, B.Sc., A.M., D.O., Los Angeles....225
Postural Roentgen Study. A Review of 16 Years' Experience. Eugene R. Kraus, D.O., F.A.O.C.R., New York....231
Soft Tissue Changes That May Follow Postural Defects. Angus G. Cathie, D.O., Philadelphia....235
Psychosomatic Problems in Surgical Practice. Paul R. Koogler, D.O., Kirksville, Mo....238
EDITORIALS—
Midyear Meeting of Board of Trustees. R. C. McCaughan, D.O., Chicago....241
Health Insurance. R. C. McCaughan, D.O., Chicago....242
The Kansas Case....242
Osteopathic Writing. Katherine Becker, A.B., Chicago....243
Educational Number. Katherine Becker, A.B., Chicago....243
ANDREW TAYLOR STILL MEMORIAL BUILDING DEDICATED....244
SPECIAL ARTICLES—
The Role of the Osteopathic Lesion in the Production of Cardiac Pathology. Viola M. Frymann, M.B., B.S. (Lond.), Los Angeles....246
Role of the Osteopathic Lesion in Diseases of the Liver. Robert C. Schaefer, Kirksville, Mo....249
Complaint Against Oregon State Medical Society....252
DEPARTMENT OF PROFESSIONAL AFFAIRS—
Council on Education to Meet....255-Pr.A
Bureau of Professional Education and Colleges:
Graduate Courses Offered....255-Pr.A
Committee on Special Membership Effort:
Membership Report and Honor Roll....255-Pr.A
DEPARTMENT OF PUBLIC AFFAIRS—
Bureau of Public Education on Health:
Public Education on Health Conference....255-Pu.A
Federal Court Decision in Kansas Osteopathic Case....255-Pu.A
DEPARTMENT OF PUBLIC RELATIONS—
Announcement of Regular Corps Examination for Medical Officers (Osteopathic), United States Public Health Service....256-Pu.R
Research Grants....256-Pu.R
Deaths by Cause....257-Pu.R
CURRENT MEDICAL LITERATURE....257
EDUCATIONAL SUPPLEMENT—
Osteopathic Education. Lawrence W. Mills, Chicago....261
Osteopathic Education Looks Ahead. Otterbein Dressler, D.O., M.Sc., Philadelphia....270
Registry of Osteopathic Hospitals....273
Approved Residency Training Programs....274
BOOK NOTICES....277
CONVENTIONS AND MEETINGS....ad p. 31
STATE AND NATIONAL BOARDS....ad p. 34
BOOKS RECEIVED....ad p. 45

AUTHOR AND SUBJECT INDEX

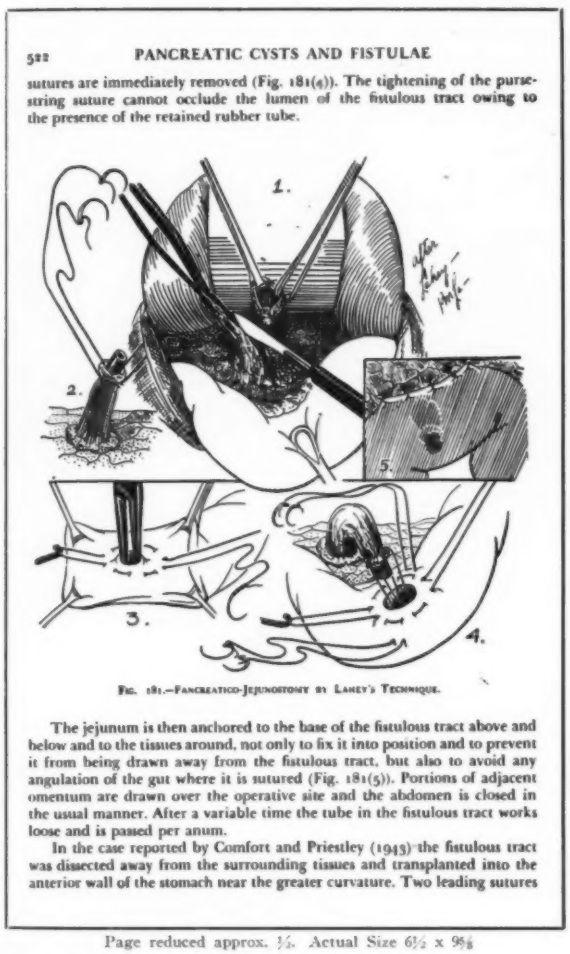
Academy of Applied Osteopathy, second annual prize contest....251
Accident prone patient, [Gleason]..ad. p. 36-Ex.
Alarm reaction and diseases of adaptation, [Selye]....258-CML
American Osteopathic Association: See also Membership, A.O.A.
Andrew Taylor Still Memorial Building dedicated....244
attitude toward health insurance, [McCaughan]....242-E
Council on Education to meet....255-Pr.A
midyear meeting of Board of Trustees..241-E
Public Education on Health Conference....255-Pu.A
Andrew Taylor Still Memorial Home dedicated....244
Angina pectoris, management as illustration of the basic principles of therapy, [Chandler]....225*
Becker, Katherine:
Educational Number....243-E
Osteopathic writing....243-E
Book Notices:
The Integrative Action of the Nervous System. Charles Sherrington....277-BN
Textbook of Human Physiology. William F. Hamilton....277-BN
Human Gastric Function. Stewart Wolf and Harold G. Wolff....277-BN
Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics. C. F. V. Smout and R. J. S. McDowall....278-BN
The Acute Infectious Fevers. Alexander Joe....278-BN
Textbook of General Surgery. Warren H. Cole and Robert Elman....278-BN
Textbook of Embryology. Harvey Ernest Jordan and James Ernest Kindred..278-BN
A Manual of Clinical Therapeutics. Windsor C. Cutting....278-BN
Paravertebral Block in Diagnosis, Prognosis, and Therapy. Felix Mandl..278-BN
Hodgkin's Disease and Allied Disorders. Henry Jackson, Jr., and Frederic Parker, Jr....279-BN
Diagnosis in Daily Practice. Benjamin V. White and Charles F. Geschickter....279-BN
Epilepsy. Paul H. Hoch and Robert P. Knight, Eds....279-BN
Essentials of Pharmacology. Frances K. Oldham, F. E. Kelsey, and E. M. K. Geiling....279-BN
Artificial Pneumothorax in Pulmonary Tuberculosis. T. G. Heaton....279-BN
British Surgical Practice. Ernest Rock Carling and J. Paterson Ross, Eds....280-BN
A Textbook of Clinical Neurology. Israel S. Wechsler....280-BN
Mental Mischief and Emotional Conflicts. William S. Sadler....280-BN
Books Received....ad p. 45
Cathie, Angus G.:
Soft tissue changes that may follow postural defects....235*
Chandler, Louis C.:
The management of angina pectoris as an illustration of the basic principles of therapy....225*
Circulation, fetal hemodynamogram, [Bischoff]....258-CML
Climacteric: See Menopause
Conventions and meetings....ad p. 31
Cranial articular mobility, [Kimberley]....ad p. 40-Ex.
Cysts, perineurial, of sacral roots, [Tarlov]....276-CML
Deaths by cause, [Swope]....256-Pu.R
Diseases of adaptation, alarm reaction and, [Selye]....258-CML
Dressler, Otterbein:
Osteopathic education looks ahead....271-OE
Education:
educational indigestion, [Whitfield]....ad p. 41-Ex.
osteopathic, [Mills]....261-OE
osteopathic, Council on Education of the A.O.A. to meet....255-Pr.A
osteopathic, Educational Number, [Becker]....243-E
osteopathic, graduate courses offered....255-Pr.A
osteopathic, looks ahead, [Dressler]..271-OE
osteopathic, Supplement to THE JOURNAL....259-OE
Frymann, Viola M.:
The role of the osteopathic lesion in the production of cardiac pathology....246-SA
Grumbach, Leonard:
Book notices....277-BN
Health:
insurance, [McCaughan]....242-E
Public Education on Health Conference, February 5, 6....255-Pu.A
Heart: See also Angina pectoris
role of the osteopathic lesion in production of pathology, [Frymann]....246-SA
Hemodynamogram, fetal, [Bischoff]..258-CML
Hospitals:
osteopathic, approved residency training programs....274-OE
osteopathic, registered....273-OE
osteopathic, registered hospitals approved for intern training....273-OE
Insurance, health, [McCaughan]....241-E
Interdependency of the organism, nature of, [Agersborg]....ad p. 40-Ex.
Kansas Case: See Legal and Legislative
Koogler, Paul R.:
Psychosomatic problems in surgical practice....238*
Kraus, Eugene R.:
Postural roentgen study. A review of 16 years' experience....231*
Legal and Legislative:
complaint against Oregon State Medical Society....252
Federal Court decision in Kansas osteopathic case....255-Pu.A
Kansas case....242-E
Lesion, Osteopathic:
role in liver diseases, [Schaefer]....249-SA
role in production of cardiac pathology, [Frymann]....246-SA
Liver diseases, role of osteopathic lesion in, [Schaefer]....249-SA
McCaughan, R. C.:
Health insurance....241-E
Midyear meeting of the Board of Trustees....241-E
Melnick, Arnold:
Current medical literature....258-CML
Membership, A.O.A.:
applications....ad p. 45
changes of address and new locations....ad p. 46
report and honor roll....255-Pr.A
Menopause, dangers in management, [Farell]....276-CML
Mills, Lawrence W.:
Osteopathic education....261-OE
Muscle, skeletal, treatment of painful disorders....257-CML
Northup, George W.:
Current medical literature....257-CML
Oregon State Medical Society, complaint against....252
Osteopathic writing, [Becker]....243-E
Ovaries, cystic and sclerotic, preservation of function, [Jacobson]....275-CML
Painful disorders of skeletal muscle, treatment of....257-CML
Perrin, Ward E.:
Current medical literature....258-CML
Posture:
roentgen study; review of 16 years' experience, [Kraus]....231*
soft tissue changes that may follow defects, [Cathie]....235*
Psychosomatic problems in surgical practice, [Koogler]....238*
Public Education on Health Conference, February 5, 6....255-Pu.A
Public Health:
announcement of Regular Corps examinations for medical officers (osteopathic), United States Public Health Service....256-Pu.R
Research grants, [Swope]....256-Pu.R
Sacral roots, cysts (perineurial) of, [Tarlov]....276-CML
Scalenus anticus syndrome, [Judovich]....275-CML
Schaefer, Robert C.:
Role of the osteopathic lesion in diseases of the liver....249-SA
State and National Boards:
Alaska, Ariz., Colo., Conn., Hawaii, Ill....ad p. 34
Iowa, Kans., Ky., Mass., Minn., Mont., Nev. N. H., N. Mex., Ore., R. I., W. Va., Wis., Wyo....ad p. 35
examinations by National Board....ad p. 36
re-registration of osteopathic licenses..ad p. 35
Strong, Leonard V., Jr.:
Book notices....277-BN
Surgical practice, psychosomatic problems in, [Koogler]....238*
Swope, Chester D.:
Department of Public Relations....256-Pu.R
Technic, Osteopathic:
management of angina pectoris as illustration of basic principles, [Chandler]..225*
Therapy:
management of angina pectoris as illustration of basic principles, [Chandler]..225*
Tissue, soft, changes that may follow postural defects, [Cathie]....235*
Urethane-penicillin mixtures in early closure of contaminated wounds, [Howe]....276-CML
Vocational guidance, office of, Educational Supplement contributed by....259-OE
Wounds, contaminated, early closure with urethane-penicillin mixtures, [Howe]....276-CML
Writing, osteopathic, [Becker]....243-E

Published monthly by the American Osteopathic Association. Office of Publication, 100 S. Kenilworth Ave., Oak Park, Ill. Address all communications to the Main Office at 212 E. Ohio St., Chicago 11, Ill. Subscriptions $10 a year. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 31, 1922. Entered at the Oak Park, Ill., post office as second class matter, April 1, 1926, under the Act of March 3, 1879.

ABDOMINAL OPERATIONS

By RODNEY MAINGOT, F. R. C. S. (Eng.)

Surgeon to the Royal Free Hospital
and Southend General Hospital, London



522 PANCREATIC CYSTS AND FISTULAE

sutures are immediately removed (Fig. 181(4)). The tightening of the purse-string suture cannot occlude the lumen of the fistulous tract owing to the presence of the retained rubber tube.

FIG. 181.—PANCREATICO-JEJUNOSTOMY BY LAHEY'S TECHNIQUE.

The jejunum is then anchored to the base of the fistulous tract above and below and to the tissues around, not only to fix it into position and to prevent it from being drawn away from the fistulous tract, but also to avoid any angulation of the gut where it is sutured (Fig. 181(5)). Portions of adjacent omentum are drawn over the operative site and the abdomen is closed in the usual manner. After a variable time the tube in the fistulous tract works loose and is passed per anum.

In the case reported by Comfort and Priestley (1945) the fistulous tract was dissected away from the surrounding tissues and transplanted into the anterior wall of the stomach near the greater curvature. Two leading sutures

Page reduced approx. ½. Actual Size 6½ x 9⅝

WITH CONTRIBUTIONS BY

Lester R. Dragstedt, M.D., Ph.D.
University of Chicago, Ill., U.S.A.

Stuart W. Harrington, M.D., F.A.C.S.
Mayo Clinic, Rochester, Minn., U.S.A.

A. J. Cokkinis, F.R.C.S. (Eng.)
St. Mary's Hospital, London

Harold R. Dew, F.R.C.S. (Eng.), F.A.C.S.
University of Sydney, Australia

R. C. Brock, M.S., F.R.C.S. (Eng.)
Guy's Hospital, London

Cuthbert E. Dukes, O.B.E., M.Sc., M.D.
St. Mark's Hospital, London

O. V. Lloyd-Davies, M.S., F.R.C.S. (Eng.)
Hampstead General Hospital, London

Norman C. Tanner, M.B., F.R.C.S. (Eng.)
St. James' Hospital, London

OPERATIVE FIELDS COVERED

Stomach and Duodenum—Spleen—Pancreas—Gall Bladder and Bile Ducts—Liver—Vermiform Appendix—Peritoneum, Mesentery and Omentum — Intestines — Diaphragmatic Hernia and Portal Hypertension.

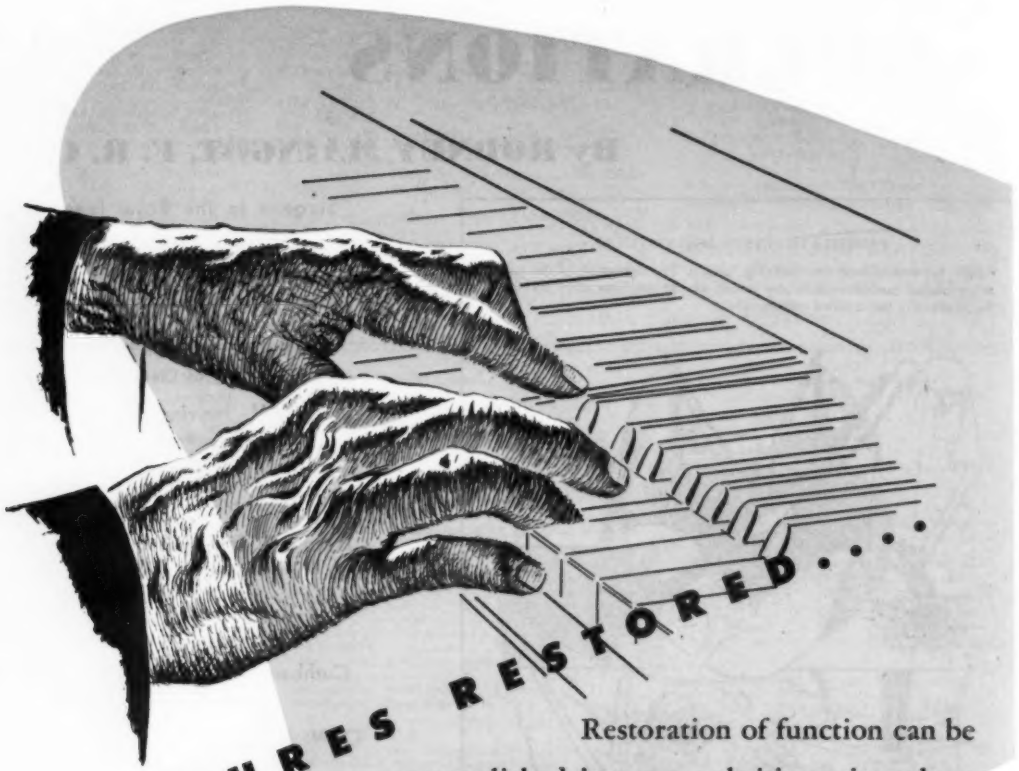
PUBLISHED OCTOBER, 1948

This new work, published Oct. 6, 1948 is of prime value to the abdominal surgeon, the general surgeon, the surgical resident and the intern as a presentation of the **detailed technics** (beautifully and profusely illustrated) of modern abdominal surgery combined with the necessary **diagnostic data, choice of operation** in the individual case, **preoperative care** of the patient, **difficulties** and **dangers** which may confront the surgeon during operation, the immediate and remote **results of operations** described, **postoperative care** and other factors of importance in reducing operative mortality.

Every effort was made by the author and his distinguished collaborators to supply from their extensive experience an authoritative and practical work which is up to date in every respect.

One Volume, 1298 Pages, 1051 Illustrations, including 16 color Plates, $16.00

APPLETON-CENTURY-CROFTS, INC.
35 West 32nd Street, New York 1, New York

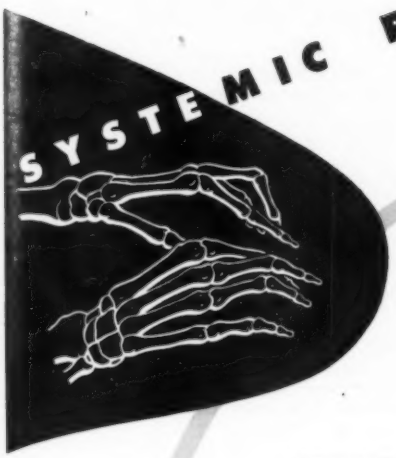


Restoration of function can be accomplished in most arthritic patients by a complete systemic rehabilitation program. Darthronol is an integral part of such a therapeutic program. Its efficacy is due to the antiarthritic effects of the high dosage vitamin D together with the well-established nutritional influences of the eight other vitamins. Darthronol treats the arthritic —not merely the arthritis.

DARTHRONOL

for the Arthritic

SYSTEMIC REHABILITATION



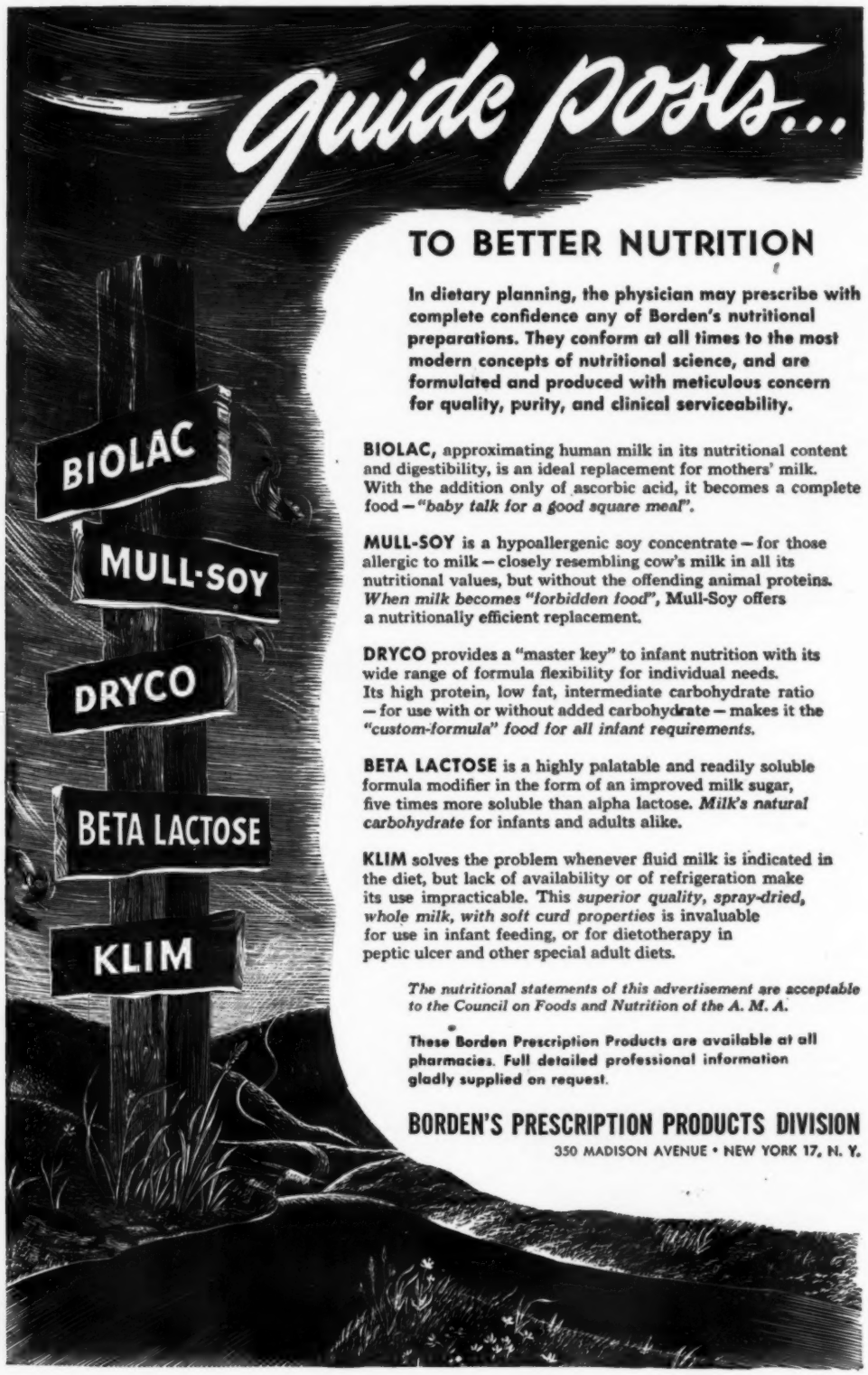
EACH CAPSULE CONTAINS

Vitamin D (Irradiated Ergosterol)	50,000 U.S.P. Units
Vitamin A (Fish-Liver Oil)	5,000 U.S.P. Units
Ascorbic Acid	75 mg.
Thiamine Hydrochloride	3 mg.
Riboflavin	2 mg.
Pyridoxine Hydrochloride	0.3 mg.
Calcium Pantothenate	1 mg.
Niacinamide	15 mg.
Mixed Tocopherols	4 mg.

(Equivalent to 3 mg. of synthetic Alpha Tocopherol)

a **ROERIG** *preparation*

J. B. ROERIG AND COMPANY • 536 Lake Shore Drive • Chicago 11, Illinois



TO BETTER NUTRITION

In dietary planning, the physician may prescribe with complete confidence any of Borden's nutritional preparations. They conform at all times to the most modern concepts of nutritional science, and are formulated and produced with meticulous concern for quality, purity, and clinical serviceability.

BIOLAC, approximating human milk in its nutritional content and digestibility, is an ideal replacement for mothers' milk. With the addition only of ascorbic acid, it becomes a complete food—*"baby talk for a good square meal".*

MULL-SOY is a hypoallergenic soy concentrate—for those allergic to milk—closely resembling cow's milk in all its nutritional values, but without the offending animal proteins. *When milk becomes "forbidden food",* Mull-Soy offers a nutritionally efficient replacement.

DRYCO provides a "master key" to infant nutrition with its wide range of formula flexibility for individual needs. Its high protein, low fat, intermediate carbohydrate ratio—for use with or without added carbohydrate—makes it the *"custom-formula" food for all infant requirements.*

BETA LACTOSE is a highly palatable and readily soluble formula modifier in the form of an improved milk sugar, five times more soluble than alpha lactose. *Milk's natural carbohydrate* for infants and adults alike.

KLIM solves the problem whenever fluid milk is indicated in the diet, but lack of availability or of refrigeration make its use impracticable. This *superior quality, spray-dried, whole milk, with soft curd properties* is invaluable for use in infant feeding, or for dietotherapy in peptic ulcer and other special adult diets.

The nutritional statements of this advertisement are acceptable to the Council on Foods and Nutrition of the A. M. A.

These Borden Prescription Products are available at all pharmacies. Full detailed professional information gladly supplied on request.

BORDEN'S PRESCRIPTION PRODUCTS DIVISION

350 MADISON AVENUE • NEW YORK 17, N. Y.

designed for both

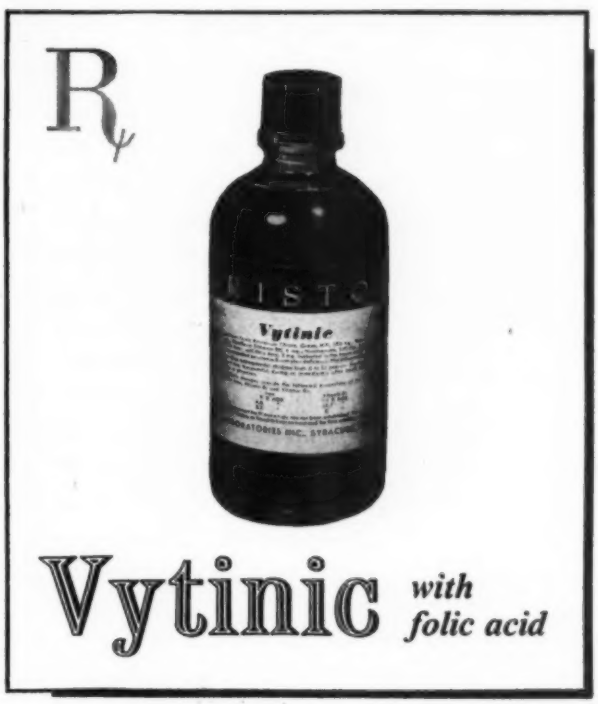
the physician's approval . .

the patient's acceptance . . .

Vytinic, Bristol's new hematinic with folic acid, will win both the physician's approval and the patient's cooperation.

Its formula reflects the modern approach to comprehensive treatment of secondary anemia from rapid hemoglobin restoration to oxygen utilization in the cell. It aims to replace essential factors certainly deficient in hemorrhagic anemia and frequently deficient in that of nutritional origin.

Vytinic will win your patients' cooperation because it is a readily tolerated liquid of agreeable taste and appearance—easy to take over long periods. It will have especial appeal in pediatrics and geriatrics.



Each fluidounce contains:

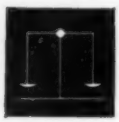
Ferric Ammonium Citrate, USP	390 mg.
Thiamin Hydrochloride (Vitamin B_1)	10 mg.
Riboflavin (Vitamin B_2)	4 mg.
Niacinamide	100 mg.
Liver extract derived from 20 Gm. of fresh liver	
Folic Acid	2 mg.

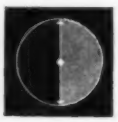
Available in bottles of 12 oz. and 1 gal.
Send for tasting sample

Dosage: *For adults—one tablespoonful, t.i.d., during, or immediately after meals.*
Children—in proportion to their age.
The suggested daily adult dose provides the following multiples of the minimum daily requirement for adults: iron—10, vitamin B_1—15, vitamin B_2—3, plus adequate amounts of niacinamide, liver extract and folic acid.

Bristol
LABORATORIES INC.
SYRACUSE, NEW YORK

MODERN DIGITALIS THERAPY...

reduces dosage  *to milligrams*

... disability  *to hours!*

Simplicity of administration with dosage *by weight* and effect *in hours* —together with virtual freedom from locally induced nausea or vomiting —makes Digitaline Nativelle a preparation of choice wherever and whenever digitalis therapy is indicated.

In developing the first clinically-proven active principle of digitalis purpurea, Digitaline Nativelle has provided the medical profession with a major advance in the treatment of cardiac decompensation. Utilizing the active principle, Digitaline Nativelle acts uniformly whether administered by mouth or by vein.

Prescribed ... for these 5 advantages:

1. Uniform potency by weight.
2. Identical dosage and effect when given intravenously or by mouth.
3. Virtual freedom from gastric upsets and other untoward side effects.
4. Absorption and action is rapid, uniform, determinable by the clock.
5. Active principle enthusiastically accepted by leading cardiologists.

SIMPLICITY OF ADMINISTRATION

RAPID DIGITALIZATION ... *1.2 mg. in equally divided doses of 0.6 mg. at three-hour intervals.*

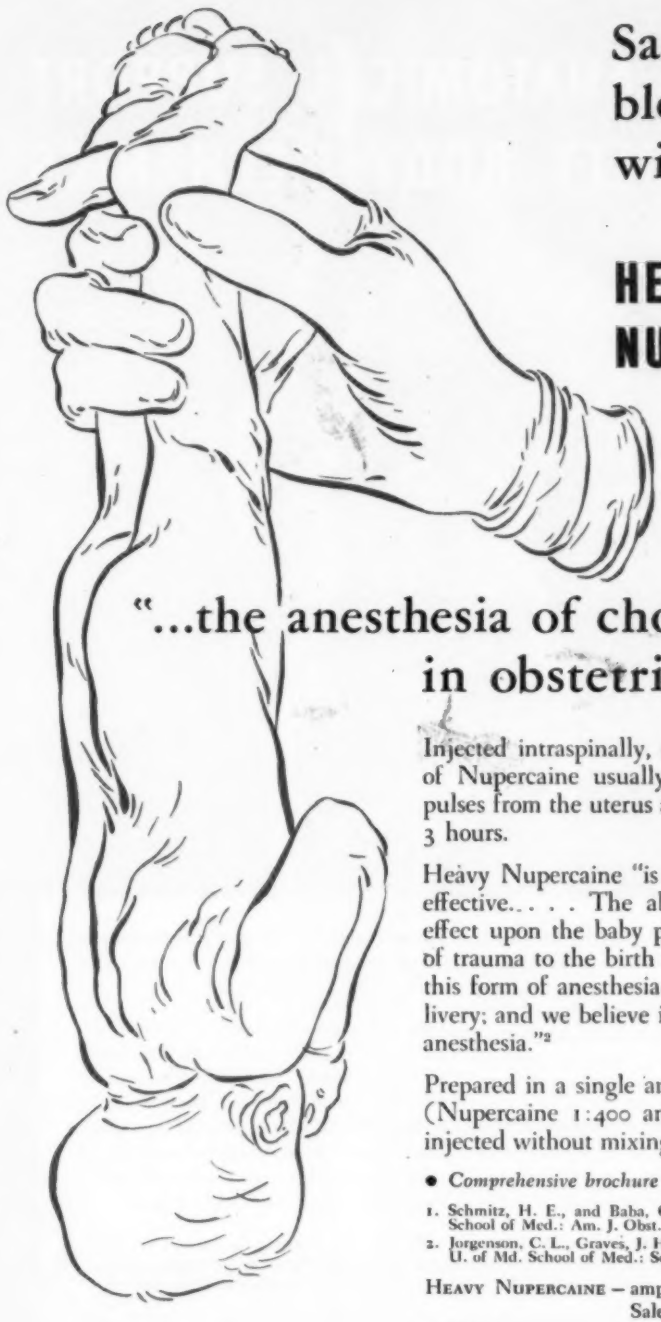
MAINTENANCE: *0.1 or 0.2 mg. daily depending upon patient's response.*

CHANGE-OVER: *0.1 or 0.2 mg. of Digitaline Nativelle may advantageously replace present maintenance dosage of 0.1 gm. or 0.2 gm. of whole leaf.*

Supplied through all pharmacies in 0.1 mg. pink tablets and 0.2 mg. white tablets — in bottles of 40 and 250. In ampules of 0.2 mg. (1 cc.) and 0.4 mg. (2 cc.) — in packages of 6 or 50. VARICK PHARMACAL CO., INC. (Division of E. Fougera & Co., Inc.) 75 Varick Street, New York, New York.

Digitaline Nativelle

... active glycoside of digitalis purpurea (*digitoxin*)



Saddle block with

HEAVY NUPERCAINE

"...the anesthesia of choice in obstetrics"[1]

Injected intraspinally, only 2.5 mg. (1/25 gr.) of Nupercaine usually will block sensory impulses from the uterus and birth canal for 1½ to 3 hours.

Heavy Nupercaine "is not only safer but more effective. . . . . The absence of any untoward effect upon the baby plus the minimal amount of trauma to the birth canal should recommend this form of anesthesia for vaginal operative delivery; and we believe it preferable to inhalation anesthesia."[2]

Prepared in a single ampul, Heavy Nupercaine (Nupercaine 1:400 and 5% dextrose) may be injected without mixing and without dilution.

• *Comprehensive brochure and bibliography on request.*

1. Schmitz, H. E., and Baba, G., Lewis Meml. Hosp., Loyola U. School of Med.: Am. J. Obst. & Gynec., Nov., 1947.
2. Jorgenson, C. L., Graves, J. H., and Savage, J. E., Dept. of Obst., U. of Md. School of Med.: Southern Med. J., Sept., 1948.

HEAVY NUPERCAINE – ampuls of 2 cc. in cartons of 10. Sales limited to hospitals.

Ciba PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY

NUPERCAINE (brand of dibucaine)—T. M. Reg. U. S. Pat. Off.

2/1443M

CAMP ANATOMICAL SUPPORT FOR FAULTY BODY MECHANICS

PATIENT OF THIN TYPE OF BUILD—
SKELETON INDRAWN

In conditions of faulty body mechanics, the nonuse of the abdominal muscles allows the pelvis to rotate downward and forward, bringing the sacrum up and back. There results an increased forward lumbar curve with the articular facets of the lumbar spine crowded together in the back.

The dorsal spine curves backward with compression of the dorsal intervertebral discs and the cervical spine curves forward with the articular facets in this region closer together. Therefore, chronic strain of the muscles, ligaments and joints of the spine and pelvis occurs.

Camp Anatomical Supports have an adjustment by means of which their lower sections can be evenly and accurately brought about the major portion of the bony pelvis. When the pelvis is thus steadied, the patient can contract the abdominal muscles with ease and then with slight movement straighten the upper back.

Relieving back strain and fatigue due to faulty body mechanics is a feature of the Camp Support illustrated and other types for Prenatal, Postnatal, Postoperative, Pendulous Abdomen, Visceroptosis, Nephroptosis, Hernia and Orthopedic conditions.

S. H. CAMP AND COMPANY • JACKSON, MICHIGAN

World's Largest Manufacturers of Scientific Supports

Offices in New York • Chicago • Windsor, Ontario • London, England

EFFECTIVE RELIEF OF CERTAIN DISORDERS OF MUSCLE FUNCTION

PHYATROMINE

pat. pend.

PHYSOSTIGMINE SALICYLATE–ATROPINE SULFATE INJECTION

Kremers-Urban

PHYATROMINE* acts specifically to facilitate normal transmission of nerve impulses to skeletal muscles. It has proved markedly beneficial in: • Relief of muscle spasm • Relief of pain due to muscle spasm • Prevention, or reduction in severity, of deformities arising from muscle spasm.

For patients suffering from myasthenia gravis, arthritis and related conditions (fibrositis, bursitis, spondylitis, muscular stiffness, "charley horse"), and neuromuscular dysfunction due to trauma—PHYATROMINE offers a valuable aid to rapid, lasting relief. Many physicians use it to special advantage in conjunction with thermal or other physiotherapy.

ADVANTAGES: Economy of medication; simplified drug form; stable solution—ready for immediate use; relative freedom from unwanted side-effects. Often, relief is experienced in fifteen to thirty minutes after injection.

FORMULA: Each cc. of PHYATROMINE contains 0.6 mg. each of physostigmine salicylate and atropine sulfate.

SUPPLIED: 30-cc. multiple-dose vials; 1-cc. ampuls, boxes of 25.

*Exclusive trademark of Kremers-Urban Company.

K·U

Kremers-Urban Company
ESTABLISHED 1894
BOX 2038
MILWAUKEE 1
WISCONSIN

Please send me:
☐ Professional sample vial of 5 cc., without cost or obligation.
☐ _____ 30-cc. vials of PHYATROMINE.
Send bill ☐ C.O.D. ☐
Prices: 30-cc. vial: $6.00; box of 25 1-cc. ampuls: $6.00.

Name .....
(Please Print)
Address .....
City ..... Zone ..... State .....

New Q. V. Packages . . .
Same Q. V. Formulas

The same dependable, ethical products—VITAMINS—NUTRITIONAL SPECIALTIES so successfully used for many years *. . . but completely re-designed packages to give a more ethical appearance and quick identity.*

Our long established "years tested" reputation for QUALITY products and new additions to our professional personnel assure you of a SUPERIOR line at lowest prices consistent with QUALITY.

We shall continue to give the very best service possible.

Our List Includes:

VITAMIN TABLETS AND CAPSULES

Single and multiple, in various combinations, including essential minerals.

DICALCIUM PHOSPHATE, CALCIUM GLUCONATE and VIOSTEROL (Compressed Tablet).

FOLIC ACID

FOLIC ACID and IRON

MULTI-VITAMINS with FOLIC ACID

RUTIN

RUTIN and ASCORBIC ACID

TOCOPHEROLS (Vitamin E)

WHEAT GERM OIL

NUTRITIONAL SPECIALTIES

QUAMINOS (Protein Hydrolysate Q-V)

BULK-LAX

Write for Complete Information and Price List

The Q-V Corporation

REMINGTON BUILDING **KALAMAZOO 11, MICHIGAN**

INTRODUCING...

The *New* FISCHER De Luxe RF 250 Milliampere Radiographic-Fluoroscopic Shockproof X-ray Apparatus, featuring automatic control, simplicity of operation, economy, great durability.

ANNOUNCING . . . the new home of H. G. FISCHER & CO.—one of the most modern plants in the X-ray industry, now conveniently located in Franklin Park, Illinois, a western suburb of Chicago. New manufacturing facilities now permit greater economies of operation, which mean added advantages in quality, price and delivery to the purchaser. Doctors are cordially invited to visit the new FISCHER plant.

For full details on the new De Luxe Model "RF 250" fill in the enclosed coupon, or see your local FISCHER representative.

H. G. FISCHER & CO.

9451-91 W. BELMONT AVE. FRANKLIN PARK, ILLINOIS

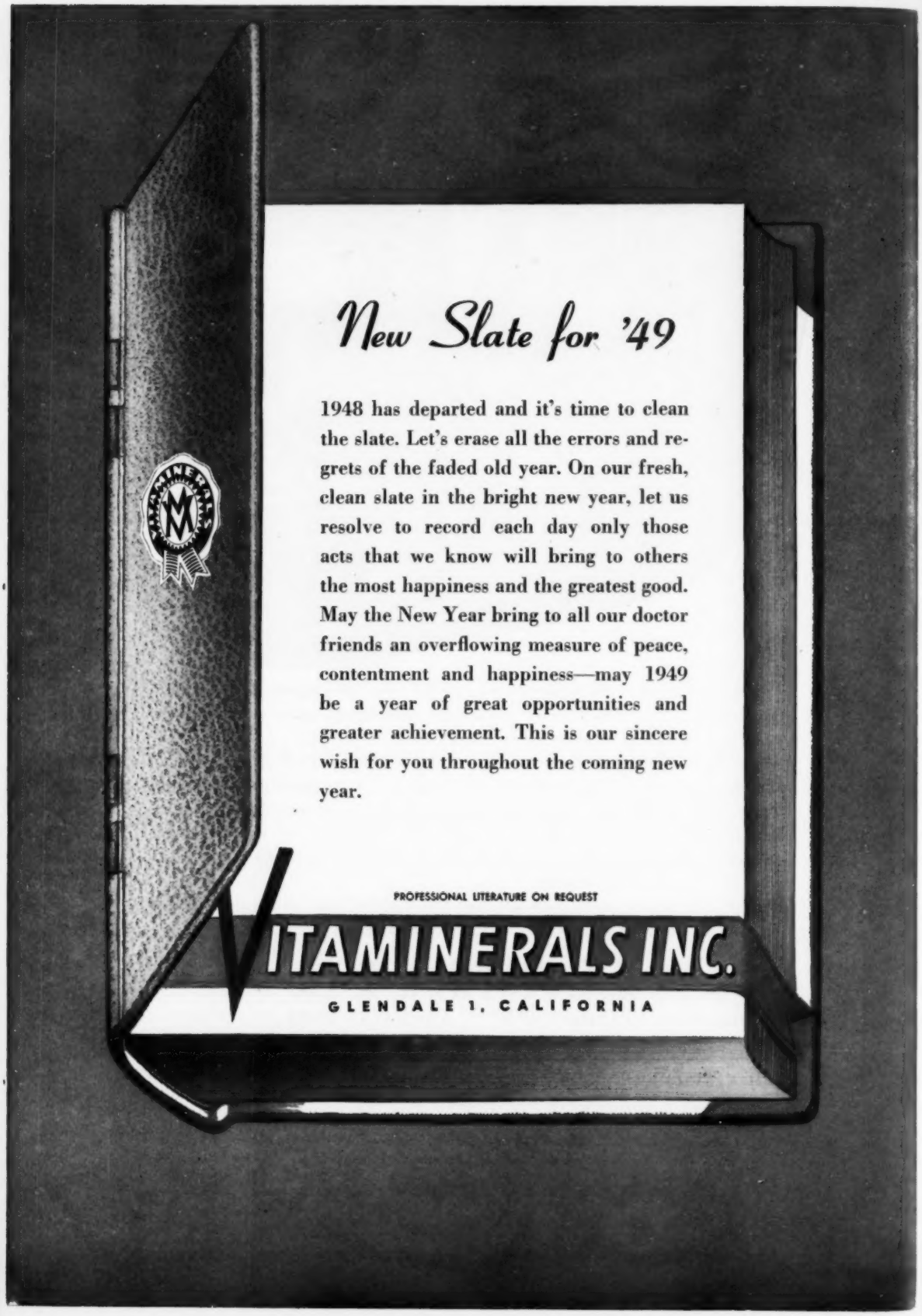
H. G. FISCHER & CO., Franklin Park, Ill.

Please send, without obligation, full information on:

☐ New FISCHER De Luxe Model RF 250 Ma. Shockproof X-ray Apparatus.
☐ Complete Line of X-ray and Physical Therapy Equipment.
☐ Small Down Payment—Low Monthly Payments—Income-While-You-Pay Plan.

Name

Address *City* *Zone* *State*


New Slate for '49
1948 has departed and it's time to clean the slate. Let's erase all the errors and regrets of the faded old year. On our fresh, clean slate in the bright new year, let us resolve to record each day only those acts that we know will bring to others the most happiness and the greatest good. May the New Year bring to all our doctor friends an overflowing measure of peace, contentment and happiness—may 1949 be a year of great opportunities and greater achievement. This is our sincere wish for you throughout the coming new year.
PROFESSIONAL LITERATURE ON REQUEST
VITAMINERALS INC.
GLENDALE 1, CALIFORNIA

NEW EFFECTIVE HEMATINIC

Laurium

provides readily available iron for the anemia patient.

Gastrointestinal symptoms are notably absent, since the source of iron in Laurium is ferrous gluconate—readily absorbed, well utilized, better tolerated.

In treatment of iron deficiency and nutritional anemias—despite the qualitative and quantitative adequacy of the iron prescribed—the conversion of iron salts to hemoglobin may be balked by absence of necessary hemopoietic adjuncts. Laurium is fortified with adjunctive hematinic principles that

promote utilization of iron
stimulate erythropoiesis
correct concomitant vitamin deficiencies

Laurium

Administration—As a dietary supplement, one or two capsules daily.

In the treatment of hypochromic or nutritional anemia, one or two capsules three times daily as required by the severity of the anemia and the response to therapy.

Laurium

Each capsule contains:

Ferrous Gluconate	280 mg.
Liver Concentrate (1:20)	200 mg.
(Equivalent—4 Gm. Fresh Liver)	
Folic Acid	1 mg.
Thiamine Hydrochloride	2 mg.
Riboflavin	1 mg.
Niacinamide	10 mg.
Ascorbic Acid	15 mg.

Each capsule contains approximately 33 mg. of elemental iron—three times the Minimum Daily Adult Requirement—two times the M.D.R. for thiamine, one-half the M.D.R. for riboflavin and ascorbic acid, with 10 mg. of niacinamide. The need for folic acid in human nutrition has not been established.

Laurium: supplied in bottles of 100 capsules.

Whittier

LABORATORIES

Division Nutrition Research Laboratories

Chicago 30, Illinois

LOOKING FORWARD

WITH OCCY-CRYSTINE PRESCRIBERS

Upon the occasion of the thirtieth anniversary of the successful formulation of Occy-Crystine by a practicing physician, the makers of this product pause to convey their appreciation to the many members of the profession—who, by their numerous prescriptions and voluntary communications over the past three decades, have testified to its therapeutic efficacy and to the beneficial results derived from personal and clinical use.

During the years ahead, with the help and guidance of leaders in the pharmaceutical, biochemical and physiological fields, and in the light of ever newer knowledge, we shall continue to keep reports on Occy-Crystine therapy fully abreast of the latest findings on the value of this saline cathartic, cholagogue, diuretic and sulfur-bearing agent.

C. P. Bennett M.D.
MEDICAL DIRECTOR

1918 ~ 1948 ~ ~ 30 YEARS YOUNG

SEND FOR A PHYSICIAN'S SAMPLE OF OUR
PROTEIN DIGEST No. 26

Sidamine Tablets
or
Sidamine Granules

the amino acid tablet—uncoated—but carrying 70% protein,
no dextrose or other carbohydrate filler.

In writing for samples, please give your degree

Professional Foods

Cedar Rapids, Iowa

COLCIN PAN-ENZYMES NORMIN

Send for Details on a Sound Reducing Regime and Plan

for maintaining
urinary
alkalinity
during
sulfonamide
therapy

One heaping teaspoonful provides:
Calcium Glycerophosphate,
1 6/10 grs. 0.10 Gm.
Magnesium Phosphate, 3½ grs. 0.22 Gm.
Calcium Phosphate, 3½ grs. 0.22 Gm.
Potassium Bicarbonate, 7 grs. 0.45 Gm.
Sodium Bicarbonate, 17 grs. 1.10 Gm.
Sodium Citrate, 48 grs. 3.11 Gm.

specify . . . 'alka-zane'*
alkaline effervescent compound

'Alka-Zane'* Alkaline Effervescent Compound gives a supply of different bases normally present in the body. The use of a variety serves to be more "natural" than administering a single alkali such as sodium bicarbonate.

'Alka-Zane' Alkaline Effervescent Compound is a pleasant and efficient agent for alkalinizing the urine; in addition, it encourages a good fluid intake. These properties make 'Alka-Zane' a very useful product during sulfonamide therapy where it is necessary to raise the pH of the urine and insure a good fluid intake to prevent crystalluria. 'Alka-Zane' Alkaline Effervescent Compound in water produces a palatable drink that makes it easy to get patients to take enough fluids.

How Supplied: 'ALKA-ZANE' Alkaline Effervescent Compound is supplied in 1 1-2 oz., 4 oz., and 8 oz. bottles.

*T. M. Reg. U. S. Pat. Off.

William R. Warner & Co., Inc. 113 West 18th Street, New York 11, N. Y.

New (7th) Edition---Already Reprinted!

Ormsby and Montgomery Diseases of the Skin

By OLIVER S. ORMSBY, M.D.

Rush Professor of Dermatology Emeritus, University of Illinois; Attending Dermatologist to the Presbyterian Hospital of Chicago.

and HAMILTON MONTGOMERY, M.D., M.S.

Associate Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota

Long considered one of the finest books ever written on diagnosis and treatment of Diseases of the Skin, this outstanding one-volume work is now in a thoroughly revised, enlarged and up-to-date *new (7th) edition*. It is more than 100 pages larger than the previous edition and reflects recent findings of importance to the entire field of dermatology. More than 100 new illustrations have been added and many older ones deleted. There are 11 new color illustrations, making a total of 18 in color on 11 plates.

The treatment of syphilis has been rewritten to include the latest observations from the U. S. Public Health Service and leading syphilologists, especially regarding the use of penicillin. Parasitic affections due to plant or animal parasites have been reclassified and rewritten. There is an entirely new approach and more detailed description of mycology as it pertains to pathogenic fungi in the skin. Clinical conditions of the skin met in everyday practice are described and illustrated. With few exceptions, the Standard Nomenclature of Diseases is employed throughout.

1462 Pages. *764 Illustrations on 683 Figures.* *18 Illustrations in Color on 11 Plates.* *$18.00*

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

"A Suture for Every Surgical Situation"

For nearly forty years Davis & Geck, Inc., has specialized exclusively in the development and manufacture of sutures. As a result the D&G line is so complete that it includes a suture of known standard and predictable behavior for every surgical need. D&G sutures are obtainable through dealers everywhere.

DAVIS & GECK, INC.

57 Willoughby Street Brooklyn 1, New York

so safe...

The more than two billion TAMPAX tampons purchased in the past twelve years (plus extensive clinical tests*) bespeak the inherent safety of these dainty intravaginal cotton guards.
They do not cause vaginitis or erosion, and cannot block the flow.
The three absorbencies (Regular, Super, Junior) individualize menstrual hygiene —and are amazingly comfortable and convenient, and thoroughly adequate.

*West. J. Surg., Obstet. & Gynec., 51:150, 1943; J.A.M.A. 128:490, 1945; Am. J. Obst. & Gynec., 48:510, 1944, etc.

TAMPAX INCORPORATED
PALMER, MASS.

AOA-19

the internal menstrual guard of choice **TAMPAX**

Your request will bring related literature and professional samples promptly.

ACCEPTED FOR ADVERTISING BY THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

ACTIVE INGREDIENTS
Zinc Chloride - Menthol
Formaldehyde - Saccharine
Oil Cinnamon - Oil Cloves
Alcohol 5%

LAVORIS
MOUTHWASH AND GARGLE
REG. U.S. PAT. OFF.

DOCTOR...

The distinctive cleansing and stimulating properties of Lavoris will prove a valuable adjunct to your treatment of inflamed or atonic oral conditions.

The Ideal Oral Prophylactic

DETACHES AND REMOVES GERM HARBORING FILM FROM MOUTH AND THROAT

THE LAVORIS COMPANY • MINNEAPOLIS 1, MINN.

4

HEMABOLOIDS®

(Iron Proteinate)

FORMULAS

Hematinic Therapy to Meet Individual Requirements

Presenting iron in readily assimilable protein combination. Cause no puckering, griping, gastric upsets, discoloration of teeth, or constipation.

Palatable • Well Tolerated

Tablets **HEMABOLOIDS** *with* Folic Acid

Each tablet represents:
Iron (as proteinate)..... 50 mg.
Folic Acid..... 5 mg.

HEMABOLOIDS *with* Liver Concentrate

Each fluid ounce represents:
Alcohol (by volume)..... 17%
Iron (as proteinate)..... 120 mg.
Liver Concentrate (20:1)..... 500 mg.
Cane sugar, glycerine, flavoring...aa...q.s.

Tablets **HEMABOLOIDS** *with* Liver Concentrate

Each tablet represents:
Iron (as proteinate)..... 35 mg.
Liver Concentrate (20:1)..... 100 mg.

HEMABOLOIDS ARSENIATED

Each fluid ounce represents:
Alcohol (by volume)..... 17%
Arsenous Acid..... 1/20 gr.
Iron (as proteinate)..... 120 mg.
Cane sugar, glycerine, flavoring...aa...q.s.

Arlington

THE ARLINGTON CHEMICAL COMPANY, YONKERS 1, NEW YORK

Old Age NEED NOT MEAN *Chronic Illness*

Clinical studies[1,2,3] demonstrate that the results of inadequate dietaries are insidiously cumulative and may not become evident for many years. Many of the afflictions of old age are now attributed to lifelong faulty dietaries and no longer need be the inevitable accompaniment of advanced years.

In advanced age the wisdom of dietaries high in vitamins, minerals, and protein, low in fat, and moderate in carbohydrate, is pointedly emphasized in reported clinical studies. Liberal amounts of vitamin B complex and of calcium, in particular, are important for increasing the appetite and for supporting the calcium integrity of the skeletal structure.

Ovaltine in milk, a delicious *multiple* dietary supplement, is highly useful in the management of aged patients. Its multiple vitamins, its important minerals, and its biologically complete protein are the very nutrients required for effecting full adequacy of even seriously faulty diets. The refreshing tastefulness and easy digestibility are welcomed by the aged.

The rich dietary contribution made by three daily glassfuls of Ovaltine in milk, is outlined in detail in the table.

[1] Boss, E. P.: The Physiologic and Clinical Phenomena of Aging, New Orleans M. & S. J. 97:64 (Aug.) 1944.

[2] Spies, T. D., and Collins, H. S.: Observation on Aging in Nutritionally Deficient Persons, J. Gerontology *1*:33 (Jan.) 1946.

[3] Stieglitz, E. J.: Therapy of the Aged, M. Ann. District of Columbia *17*:197 (Apr.) 1948.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILL.

Ovaltine

Three servings daily of Ovaltine, each made of ½ oz. of Ovaltine and 8 oz. of whole milk,* provide:

CALORIES	676	VITAMIN A	3000 I.U.
PROTEIN	32 Gm.	VITAMIN B_1	1.16 mg.
FAT	32 Gm.	RIBOFLAVIN	2.0 mg.
CARBOHYDRATE	65 Gm.	NIACIN	6.8 mg.
CALCIUM	1.12 Gm.	VITAMIN C	30.0 mg.
PHOSPHORUS	0.94 Gm.	VITAMIN D	417 I.U.
IRON	12 mg.	COPPER	0.5 mg

***Based on average reported values for milk.**

Introducing

The Schanne Dual Purpose Aero-Hydro Electrode
For Low Volt or Hydro Therapy To—
Feet—Ankles—Hands—Wrists—and Arms

AT LAST! A portable receptacle, for the application of Low Volt Therapy in combination with aerated water or as indicated.

Featuring

Ample force and volume to produce a vertical whirling motion. The air may be directed to either one or both compartments.

Permits application of Contrast Baths (Hot or cold).

Motor and aerator encased in sturdy, attractive wooden cabinet mounted on rubber tired casters. Lucite, shockpruf compartment receptacle, ample for treating all extremities. May be used on cabinet, floor, table, foot-stool or at bedside.

The Schanne L.V.—Aero-Hydro Electrode is mobile, portable, convertible and offers maximum efficiency with minimum equipment at a low cost. Only $237.50 complete, F.O.B. New York, New York.

Visit Your Dealer for Complete Details

Write For Literature

American Medical Specialties Co., Inc.

Exclusive Agents All Countries

12 E. 12th St. **New York 3, N.Y.**

DR. VERRIE WYSE

¢OLLE¢T$ IN FULL ON TIME

BY USING BILLS AND STATEMENTS

Dr. Wyse knows that a patient's feeling of gratitude brings immediate payment IF a bill is sent AT ONCE. He knows that a delay in sending a bill can make a bad debt and lose a patient. Some patients can't or won't pay until the end of a month. So, Dr. Wyse sends a business-like statement at that time and another every month. He has practically NO collection problem.

COLLECTION COSTS ARE TINY

Although Dr. Wyse' bills and statements are nicely printed on specially-made "HAMMERMILL" bond they cost him ONLY $4.25 for each 1,000! That's what we charge and his other stationery costs him just as little. What are YOU paying? Are you satisfied?

FREE SAMPLES AND CATALOGUES

Samples of Dr. Wyse' stationery and copy of BIG catalogue, illustrating, describing and pricing ALL items used in doctors' offices, is yours on request. No obligation.

PROFESSIONAL PRINTING COMPANY, INC.

America's Largest Printers to the Professions

NEW YORK, N. Y.

STATIONERY • HISTACOUNT PRODUCTS
PRINTING • RECORDS • FILES & SUPPLIES

PROFESSIONAL PRINTING CO., INC.
15 E. 22nd St., New York, N. Y.

Please send me samples of stationery and copy of your BIG general catalogue.

Dr. .....

.....

.....

Lanteen JELLY *with* HEXYLRESORCINOL

FOR MAXIMUM SPERMATOCIDAL EFFECTIVENESS

Lanteen Jelly is a combination of powerful spermatocidal agents, including hexylresorcinol, the most potently bactericidal and least toxic of the alkyl substituted resorcinols,[1] described by Goodman and Gilman as "an effective and harmless contraceptive."[2]

Ethically promoted—advertised only to the medical profession.

Physician's package will be sent upon request.

RAPIDLY SPERMATOCIDAL. In a comparison of virtually all available jellies, Becker and Gamble found that Lanteen, the only jelly tested containing hexylresorcinol, destroyed sperm in the shortest time interval recorded.[3]

NON-IRRITATING. Clinical tests indicate that Lanteen Jelly is actually soothing to inflamed, infected and irritated membranes.

1. Leonard, V.: J.A.M.A. *83*:2005 (Dec. 20) 1924.
2. Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, MacMillan, 1941, p. 675.
3. Becker, B., and Gamble, C. J.: The Spermicidal Times of Contraceptive Jellies and Creams, Human Fertility, *11*:111 (Dec.) 1946.

Lanteen

LANTEEN MEDICAL LABORATORIES, INC.

900 N. Franklin Street, Chicago 10, Illinois

An Institution Dedicated to Medical Service for Humanity

AND NOW—with the completion of a second addition and the installation of greater facilities for diagnosis—the Ottawa Arthritis Sanatorium and Diagnostic Clinic of Ottawa, Illinois, takes another step toward realizing its objective of becoming

The Outstanding Osteopathic Diagnostic Center of the United States

During the past sixteen years, patients from every state in the Union, Canada and Cuba have received the advantages of a most thorough and detailed diagnosis. Our augmented facilities make this diagnostic consultation service available to an even greater number of osteopathic physicians.

All treatment under the direct supervision of the Founder and Director, E. C. Andrews, D.O., and the Chief of Staff, C. R. Nelson, D.O.

YOUR INQUIRIES ARE INVITED A REGISTERED OSTEOPATHIC HOSPITAL

Ottawa Arthritis Sanatorium and Diagnostic Clinic

of

Ottawa, Illinois

1933 *1949*

Cold Weather *and* PSORIASIS

Dermatologists have observed that lack of sunlight aggravates the lesions of psoriasis. This may account for patches appearing on the parts which are covered with clothing and hair.

Short, dark days and heavy winter clothes keep out the beneficial sunlight. Psoriasis is likely to get worse at this season. Prompt treatment with RIASOL may be counted on to help clear these unsightly lesions.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin, invisible, economical film suffices. No bandages necessary. After one week, adjust to patient's progress.

RIASOL is ethically promoted. Supplied in 4 and 8 fld. oz. bottles, at pharmacies or direct.

Mail coupon for your free clinical package. One trial will convince you of RIASOL'S value as an antipsoriatic.

Before Riasol Treatment

After Riasol Treatment

MAIL COUPON TODAY
TEST RIASOL YOURSELF

SHIELD LABORATORIES JAOA—1-4
12850 Mansfield Ave., Detroit 27, Mich.
Please send me professional literature and generous clinical package of RIASOL

.....D. O. .....Stre

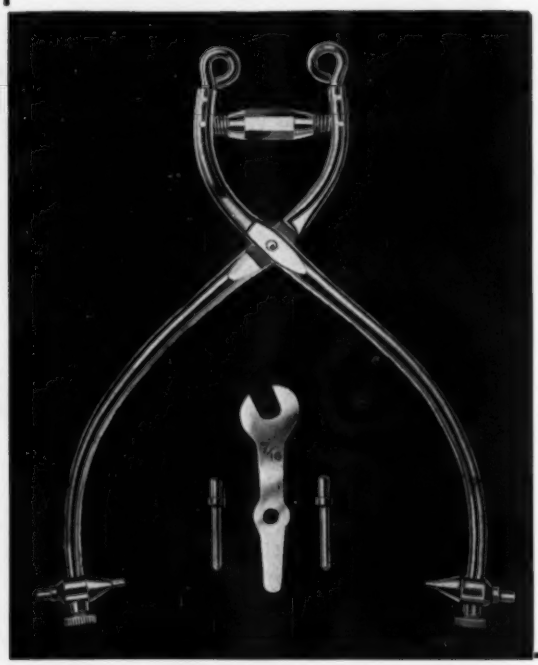
City .....Zone..... State.....

Druggist .....Address.....

RIASOL for PSORIASIS

Barton SKULL TRACTOR

Stainless Steel



Two arms articulated so they can be opened and closed by means of a turnbuckle. Drills are of different length, adaptable to both children and adults.

No. 405
Complete with two drills and wrench. $55.00

Your Professional Card will bring you a DePuy Fracture Catalog.

50 Years of Service to the Profession.

DE PUY MFG. CO., Warsaw, Ind.

AOA 1-49

Favorite With All Physicians!

KRUSE Utility Kits

Made of genuine cow-hide leather, with water-proof lining, KRUSE utility kits answer every physician's need for a small bag to hold special instrument units, syringes, dressing, etc.

No. 10	10" x 3¾" x 5"
No. 12	12" x 4¼" x 5½"
No. 12 W. H.	12" x 4¼" x 5½"
No. 14 W. H.	14" x 5¼" x 6½"

Kruse Utility Kits come in three convenient sizes to fit your special requirements, can be carried under arm or equipped with handles. Write for the name of your nearest dealer.

G. KRUSE & CO. 800 McCARTER HIGHWAY NEWARK 5, NEW JERSEY

Gelatine's effective hematopoietic action in

NUTRITIONAL ANEMIA

Hemoglobin is a conjugated protein and depends upon a liberal dietary source of protein for its production in the treatment of anemia.

Knox Gelatine U.S.P., which is made exclusively of selected bone stock, has a good proportion of the amino acids found to be of hematopoietic value. One ounce of Knox unflavored gelatine daily, in divided doses with meals, taken in water, fruit juice or milk and in conjunction with suitable iron medication, has been found of value in nutritional anemia.

Knox unflavored Gelatine U.S.P., unlike the ready-flavored gelatine powders, is *all* protein, no sugar. So it is well to specify Knox by name.

The rewards of this dietary adjustment are *Immediate*

TO THE person who habitually skimps on breakfast, or skips this meal entirely, a well balanced, adequate morning meal can quickly prove beneficial. A breakfast providing one-fourth to one-third of the daily nutrient and caloric needs improves morning physical stamina and mental acuity. It also enhances the opportunity of the other two meals of the day to complete the satisfaction of nutritional requirements.

It is estimated that literally millions of children and adults will benefit from this simple dietary adjustment.

A good base on which to plan the morning meal is a widely acclaimed basic breakfast pattern consisting of fruit or fruit juice, breakfast cereal, milk, bread and butter. An important main dish of this breakfast is the cereal serving, consisting of cereal, milk, and sugar.

The tables show the well balanced nutrient contributions of the cereal* serving and the basic breakfast pattern. Economy, tastefulness, and variety characterize both of them.

BASIC BREAKFAST	TOTALS supplied by Basic Breakfast		AMOUNTS supplied by cereal serving
Orange juice, 4 fl. oz.;	CALORIES	611	202
Ready-to-eat or Hot Cereal, 1 oz.;	PROTEIN	20.7 Gm.	7.1 Gm.
Whole Milk, 4 fl. oz.;	CALCIUM	0.465 Gm.	0.156 Gm.
Sugar, 1 teaspoon;	PHOSPHORUS	488 mg.	206 mg.
Toast (enriched, white), 2 slices;	IRON	3 mg.	1.6 mg.
Butter, 5 Gm. (about 1 teaspoon);	VITAMIN A	1074 I. U.	193 I. U.
Whole Milk, 8 fl. oz.	THIAMINE	0.52 mg.	0.17 mg.
	RIBOFLAVIN	0.87 mg.	0.34 mg.
	NIACIN	2.3 mg.	1.4 mg.
	ASCORBIC ACID	64.8 mg.	

*Composite average of all breakfast cereals on dry weight basis.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

CEREAL INSTITUTE, INC.

A RESEARCH AND EDUCATIONAL ENDEAVOR DEVOTED TO THE BETTERMENT OF NATIONAL NUTRITION

135 South La Salle Street • Chicago 3

LACTIC-ACID THERAPY

WITH SOUR LACTIC MILK OR BULK LAXATIVE WITH WHEY

→**USE CHOICE No. 1:** When bulk laxative is indicated. Contains dried acidophilic whey, a hydrogel gum and mag. trisilicate.

→**USE CHOICE No. 5-B** in constipation as in diarrheas and other types of colonic problems.

5-B solution converts sweet milk *instantly into* lactic sour, fine-curd milk.

DEPT. (AO)

Quotation and Literature by request

SCHIFF BIO-FOOD PRODUCTS
DETROIT 6, MICH.

DUODENAL-GASTRIC ULCER

Treatment: Antacid Rx:—CA-MA-SIL Powder.
2 tspfls. before and after meals upon retiring.

Clinical observations of the merits of CA-MA-SIL Antacid Powder are convincing in the treatment of excess gastric hyperacidity associated with DUODENAL and GASTRIC ULCER. Successful management with CA-MA-SIL assures the patient of 3 nearly normal meals, prompt relief, and aids rapid healing. The longer neutralizing period makes it especially effective in Duodenal Ulcer Therapy.*

A **SPECIAL** Magnesium Silicate Development (new in chemistry) for treatment of Duodenal-Gastric Ulcers.

CA-MA-SIL is available at prescription pharmacies in ¾ oz., 6 oz., and special 5 lb. hospital size.

Send for clinical supply

CA-MA-SIL COMPANY, 700 Cathedral Street, Baltimore 1, Md.

*ALSO UNEXCELLED FOR NAUSEA OF PREGNANCY.
*DOES NOT INDUCE ANOREXIA—CONTAINS NO SODA—NO ALUMINUM HYDROXIDE
PRESCRIBED BY PHYSICIANS EVERYWHERE

TECA

OUTSTANDING IN EFFICIENCY
· APPEARANCE · DURABILITY

LOW-VOLT and HYDROGALVANIC GENERATORS

Specializing in the Manufacture of Electrotherapeutic Apparatus

For Information, Write: TECA CORPORATION, 220 W. 42 St., New York 18, N.Y.

1949 PROFESSIONAL LISTING

OF

A wide range of high quality, moderately priced VITAMIN, MINERAL, AMINO ACID, LAXATIVE, ANTACID, B-ACIDOPHILUS, ANTI-ANEMIA and NUTRITIONAL SPECIALTY preparations in CAPSULES, TABLETS, POWDERS and LIQUIDS.

FOUR IMPORTANT REASONS FOR CAREFULLY CONSIDERING OUR PRESENTATION

1—ONLY TOP QUALITY PRODUCTS ARE OFFERED BY US.

2—THE CAREFUL FORMULATION AND BALANCE ARE ESSENTIALS.

3—FAST, DAILY SHIPMENTS ARE MADE ONLY DIRECT TO YOU OR ON YOUR ORDER. NEVER TO DEALERS NOR MIDDLEMEN.

4—THIS INSURES COMPLETE ETHICAL PROTECTION FOR YOUR PRACTICE, AFFORDS BETTER PRICES TO YOU AND A BETTER ETHICAL DISPENSING ARRANGEMENT.

TESTING PACKAGE FREE UPON REQUEST

ETHICAL SPECIALTIES COMPANY

326 W. KALAMAZOO AVE. **KALAMAZOO 11, MICHIGAN**

PROVE CAMEL MILDNESS for Yourself!

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

Test for yourself what throat specialists reported when a 30-day smoking test revealed:

"NO THROAT IRRITATION due to smoking CAMELS!"

MAKE YOUR OWN 30-DAY CAMEL MILDNESS TEST. Smoke Camels, and only Camels, for 30 days. Prove for yourself how mild Camels *are!*

Hundreds of men and women, from coast to coast, recently made a similar test. They smoked an average of one to two packs of Camels a day for 30 days. Their throats were carefully examined by throat specialists. And after a total of 2470 examinations—these throat specialists reported *"not one single case of throat irritation due to smoking Camels!"*

But prove it yourself . . . in your "T-Zone" (T for Taste and T for Throat). Let YOUR OWN TASTE tell you about the rich, full flavor of Camel's choice tobaccos. Let YOUR OWN THROAT give the good news of Camel's cool, cool mildness.

According to a Nationwide survey:

MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE

Doctors smoke for pleasure, too! And when three leading independent research organizations asked 113,597 doctors what cigarette they smoked, the brand named most was Camel!

The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 48, No. 5 | 212 East Ohio St., Chicago 11, Ill. | January, 1949
COPYRIGHT, 1949, BY AMERICAN OSTEOPATHIC ASSOCIATION

The Management of Angina Pectoris as an Illustration of the Basic Principles of Therapy*

L. C. CHANDLER, B.Sc., A.M., D.O.
Los Angeles

One of the commonest traits of human beings is their propensity to hunt for explanations for what they observe. Finding an explanation consists essentially in detecting some law or some general principle at work, in the specific instance, which has been proved in science or in connection with other phenomena. We get satisfaction from finding such principles because they seem to reduce the complexity of the world around us and give us a unifying element which runs through the diversity of the experiences that engulf us. Insofar as our grasp of principles is correct, we find protection against half truths and against choosing the wrong course in our actions. Our knowledge of principles gives us conviction of the soundness of our decisions and assists us in planning our activities.

The following basic concepts concerning life throw light upon certain practical principles that concern the physician. To begin with, at least on this planet, life, wherever we see it in operation, seems to be always the same. Its activities are channeled through the most innumerable varieties of form but its processes, wherever they can be observed, conform to one purpose. There seems to be just one law which we see always at work: Life must go on. To fulfill this law, life perpetually builds new forms through which it may manifest itself, varying them through the eons of time to make it possible for life to carry on in more and more diverse environments. No longer is life limited to microscopic forms in the slimes at the shores of warm primeval oceans. Fungi and bacteria, fern, tree, protozoa, coelenterates, mollusks, free swimming fish, birds, mammals, man—for each life has built a form suited to the place and circumstances in which it shall live. And in each species, as it rises in the scale of life, the individual becomes more capable of surviving and thriving under an increasingly greater variation of its environment because of the particular structure it has acquired.

Each species has been provided—or has provided itself—with a structure suited to the environment which moulded its evolution and with which it will have to meet its needs in order to survive—fish with gills to live in water, man with lungs to live in an ocean of air. Thus we see emerge the concept of the basic importance of appropriate structure as necessary for existence, a concept that could be illustrated by observations almost without number for each individual living form.

With this introduction, I wish to recite (slightly paraphrased) several chapter titles from the book which, 40 years ago, introduced me to a philosophy of the healing art so superior to the best I had found, or have found, in my scientific browsing, that I went to Los Angeles to begin the study of osteopathy. The book was "Studies in the Osteopathic Sciences: Basic Principles," by Louisa Burns, D.O.[1] The titles are these:

1. Normal *structure* is essential to normal *function*.
2. Normal *function* is essential to normal *structure*.
3. Normal *environment* is essential to normal *function*.
4. Nothing of benefit can be added to the normal environment of the normal cell.
5. Nothing better than its normal environment can be given to the injured cell.
6. Abnormal function is indicative of either abnormal structure or abnormal environment.
7. Disease symptoms are altered activities of the body, developed in the attempt to make adjustment to disease-producing influences.
8. The normal body has a habit of health toward which it persistently reverts (homeostasis).

These principles are here stated so simply that they seem self-evident to most of us but a full development of any one of them would lead us into many considerations. When we say "normal structure," for example, or otherwise use the word "normal," we open up a difficult field of definition. We can say, however, that when we are considering the conformity of a structure to normal in a particular case, it is necessary to consider it from the standpoint of the proper design of the parts making up the whole machine, the proper chemical composition of each individual part, the possible distortion of the proper design because of damage to any part, the improper adjustment of the individual parts which themselves may be of normal structure, and the effect of abnormal

*Presented before the Teaching Sessions on Osteopathic Principles, Diagnosis, and Therapeutics at the Fifty-Second Annual Convention of the American Osteopathic Association, Boston, July 27, 1948.

wear and stress upon the individual parts. Utilization of the dependence of normal structure upon normal function is grievously neglected in ordinary practice as well as we know the basic fact. A structure wastes when it is not adequately used. A structure takes on modified form according to the manner in which it is used. Continued proper use is the basis of maintaining a normal structure.

The term "environment" will suggest to every physician a great diversity of influences, but seldom will he build a complete picture of what constitutes the environment of man until he gives special thought to it. Our environment includes not only the air we breathe and in which we are immersed, its temperature, humidity, and motion; not only the force of gravity that gives us stability; not only the food we consume from our available supply; the clothes we wear, the shoes that encase our feet, the chairs in which we sit and the beds in which we sleep; not only the cosmic rays, radioactivities, ultraviolet radiation, terrestrial electrical influences, and ordinary sunlight that play upon us; but also the noises, and the other living forms with which we must compete, the music we hear, the contention or contentment, hate or affection, ideals, religious concepts, sexual stimuli, and mass psychology to which we are exposed. We are immersed in an ocean of influences, inconceivably complex, to which we must make our responses so that we may live. As one poet[2] has written, "And yet, some Thing that moves among the stars, and holds the cosmos in a web of law, moves in me too." It may be that the unknown power the poet wrote of was only the force of gravity with which we must deal, skillfully or unskillfully, every moment of our living, or it may have been some subtler influence for which we have not yet evolved methods of detection.

When Dr. Burns wrote of the habit of health, I do not believe the word "homeostasis" had yet been coined to describe the steadying influence that keeps all of our vital processes at work in a certain state of balance. The idea that the failure of homeostasis and the origin of disease might be due to some defect in the structure of the body machine rather than to some external cause never had clear expression until A. T. Still expounded his principles. If one will apply the concept of abnormal structure to the alteration of the histological neuron patterns in the central nervous system, which seems to be indicated by the work of Dr. Burns,[3] one has a comprehensive approach to the understanding of disturbed function as dependent upon altered structure which is unique among those who profess to practice the healing art. Altered structure changes the actual environment in which the cells must live whose activities constitute our life.

Properly applied, these principles will give to the physician a substantial guidance which is lacking in the practice of medicine as it is ordinarily conducted. Certain concepts must be clearly kept in mind however, to make them usable. It is necessary to remember at the same time, some widely separated ideas. First, we are interested in the survival and well-being of the individual as a whole. Second, the individual will be efficient or not according to the state of the several tissues and organs composing his body and the proper integration of their activities through a structurally normal nervous system. Third, each tissue or organ is dependent upon the structural and chemical integrity of its cells for proper functioning. Fourth, the several organs and tissues of the body are not all of equal importance to the survival of the individual as a whole. Some may be sacrificed with but little threat to the individual. Fifth, our therapeutic thinking depends ultimately on the vividness with which we can visualize the cellular environment and individual vital activity of the cells in our body tissues.

A most important decision, when faced by any clinical problem, is to determine whether the patient's condition is still in a stage where self-reparative processes are possible if proper conditions can be restored, or whether the patient's tissues or organs have suffered such damage that the recovery mechanism is too seriously disrupted to effect repair and treatment must be essentially palliative. The decision is not a simple one. It depends on the physician's familiarity with the pathology of a great number of varied conditions and his clear understanding of the usual course of the disease present. Particularly, the osteopathic physician must observe the presence or absence of structural deviations that may obstruct the natural course of recovery and thus affect prognosis. It is only proper to state that enough investigation has been conducted to justify our modifying the teachings of orthodox pathology and assuming the existence of a certain capacity for recovery from organic tissue change which is not conceivable without an understanding of certain osteopathic findings and an appreciation of the possibilities of nutritional therapy.

Insofar as we are able to place cases in the recoverable group, we can feel assured that if we remove obstructions to nature's reparative processes and supply adequately a proper environment, recovery may be expected. Our treatment must try to restore structural conditions in the body to as fully a normal as possible in all essential parts, must supply a comprehensively correct nutritional program and provide a set of wholesomely motivating emotions. In the second group, there is included a range of pathologies so great and a diversity of the therapeutic agencies that may be proposed for use so confusing that one almost despairs of rational procedure and is forced to a largely empirical judgment. One ancient dictum however should ever be in mind in treatment: Primum non nocere—First, do no harm.

The only way to appreciate what has been said above as to the application of basic principles is to take some specific clinical problem and illustrate the procedure. We may choose for example, a case of angina pectoris where the patient is suffering chest pain dependent upon intervals of myocardial ischemia and not a pseudo-angina from nerve root irritation. The patient is presumed to be one who is subject to attacks of middle or upper substernal pain with reference of the pain into the left shoulder or arm or into the neck, the attacks of pain being excited by some increased demand on the circulation, either from emotion or from physical effort, and the spell of pain usually passing away (at least in the early stages of the condition) after a few moments of rest. It is presumed that the case has been studied in such a way as to eliminate any demonstrable degree of cardiac pathology and that as definitely as possible, coronary artery disease has been excluded. It is to be remembered that this discussion does not presume to formulate a comprehensive program of treatment for angina pectoris or even to mention all of the many possible agencies: for example, surgery and the antithyroid drugs. It is presented simply to illustrate the principle of rationalizing a therapeutic approach. Angina

is chosen because there is practically universal agreement upon what the immediate background of the pain is.

Whatever produces the condition within the heart which results in the development of this pain, practically everyone agrees that it is dependent upon lack of sufficient blood in the heart muscle to meet its functional needs. Whether the chemical mechanism of pain production depends upon an insufficiency of oxygen from inadequate influx or an accumulation of metabolites from inadequate flushing of the myocardial tissue is not certain. A recent consideration of the possibility of the origination of the pain in sensory nerve endings in the coronary arterial walls is not utilized in this discussion. There is general agreement that the immediate need to secure relief is to get more blood into the heart muscle at times when the attack is impending or has appeared.

It will be interesting to recite three methods of approach to such a case. These we may call (1) a routine medical approach, (2) a routine osteopathic management and finally (3) an individually rationalized management of the case.

The patient with the type of case implied usually will not be suffering any pain when he comes to the doctor's office. In giving his story he will make quite evident the fact that the pain is related to circulatory strain, that it is paroxysmal and short-lived, that it comes on with great consistency in the presence of certain particular conditions, that it is a source of great distress and anxiety to him and is causing him concern over carrying his necessary responsibilities. Without any particular study of the case, practically any M.D. would prescribe the use of nitroglycerin, always to be taken at once when an attack of pain begins to develop. He may then, having provided the patient with almost certain temporary relief, make some further cardiac study which will usually have negative results. If the patient is overweight he probably will be encouraged to reduce conservatively. He will probably be ordered to lighten his work and perhaps to take a period of rest. If the patient is hypertensive he is likely to be given a slow acting vasodilator to try to reduce the average level of his blood pressure (the logic of which we will refer to later) and if he is in the class that has some tendency to nocturnal dyspnea he will probably be given aminophyllin or one of the related drugs. If the doctor thinks the heart is weak, he may prescribe some form of digitalis and with it some form of theobromine derivative to neutralize the supposed coronary constrictive influence of digitalis.

I believe that it would be an unusual physician, usually a cardiologist, who would go any further than this in his treatment. The curious thing is that almost everything prescribed could be decided on with no reasoning concerning the mechanisms responsible for the particular patient's complaint, because it is so nearly routine and highly empirical. When the nitrites were first used in treating angina pectoris, about 80 years ago, the theory was that the benefit came from lowering blood pressure and they were prescribed in lieu of venesection.[4] It was not discovered until later that they operate by relaxing the spasm of the coronary arteries which is presumed to be the event which is immediately responsible for the chest pain. Practically everything else recommended, whether reasoned or not, also tends to favor a better supply of blood to the heart muscle through the coronaries and is really attacking the problem on the basis of improving the cellular environment of the heart muscle cells.

Standard treatment for many conditions which has evolved from the sharing of experiences by innumerable physicians and which is effective with a considerable degree of regularity will be found, when fully analyzed, to strike at some rather fundamental factor in the initiation or perpetuation of the complaint or disease. It becomes the accepted empirical medical treatment because it works so often and if it happens to fit closely the needs of the case for which it is prescribed, the physician gets symptomatic relief with a large number of patients without much mental effort on his part. This is why the medical profession gives as high a degree of satisfaction as it does. The general practitioner can learn to handle a large proportion of his practice in this empirical way. When one physician fails to make the right prescription, the patient after awhile moves on to another who may make a slightly different selection from the several possibilities and chance upon one that is sufficiently appropriate to give satisfaction.

Let us suppose that a patient presenting an identical history comes into the hands of a good general practitioner of the osteopathic school. Assume that this physician belongs to the group which resorts to no medical adjuncts for symptomatic relief. Most osteopathic physicians, I believe, do a variety of things for their patients in addition to giving osteopathic manipulative treatment and the probable other things may be recited briefly. The patient will probably be advised regarding adequate rest, diet to reduce weight somewhat if overweight and to eliminate flatulence, a light evening meal if the patient has any trouble at night, possibly some vitamin reinforcement for the general nutritional state, and specific advice about avoiding the things which touch off spells of chest pain. When it comes to the manipulative treatment, there is going to be a great variety of procedures and explanations with different osteopathic physicians but they all will hinge upon the idea that certain vertebral, rib, or other structural disturbances modify the innervation of the heart in such a way as to disturb the regulation of blood flow so as to render the heart subject, more easily than normal, to coronary constriction.

By experience the physician knows, and it is true, that manipulation which restores a more normal state to the muscles, ligaments, and osseous structures through the upper dorsal and cervical areas of the spine often completely eliminates the susceptibility to the attacks, sometimes even without the other simple things that have been suggested. If the osteopathic physician has handled very many true angina pectoris cases, he will have learned that sometimes there is an irritability of some of the upper dorsal segments that makes it easy to induce serious attacks while the patient is receiving the treatment. This only proves that the particular treatment given was inappropriate even though it was strictly manipulative and that manipulative treatment must be used with discretion. But in the main, benefit is given, sometimes complete relief.

We will not discuss here how the osteopathic lesion is a factor in the development of angina because too much of what we would have to say would be purely theoretical, but we should emphasize that in conjunction with administering his treatment, the good osteopathic physician will impart a great degree of

reassurance to the patient and a disturbing emotional factor, which is so often prominent in these cases, may be greatly reduced. This will be particularly true if the patient falls in the essential hypertension group. It is worth reciting that a recent medical journal[5] reported the results of the use of a group of blood pressure lowering agents, including the several nitrites; the observations were carried out in some 60 cases, with careful controls. The best results were secured from the use of placebos. Even phenobarbital with its general quieting effect gave less benefit. The authors' conjecture was that probably the mere contact with the physician gave the patient reassurance which may have been the most potent of the therapeutic influences at work.

It is unfortunate that we have so few adequate published reports of the osteopathic care of cases of this type because it is my feeling that the record of benefit given would be surprisingly favorable. This I consider true in genuine angina pectoris which is not to be confused with pseudo-angina. The latter, and its relation to spinal nerve root irritation is well recognized medically.[6] On the basis of his experience and the traditional experience of his profession in angina pectoris, the osteopathic physician is usually thinking of structural changes which cause irritations that affect the cardiac innervation unfavorably and with that concept he goes to work. Unfortunately when his approach is inadequate and the patient becomes worse, because he is a member of a school lacking the great prestige of old-school medicine, his whole procedure is discredited. It is in the group of cases which fail to respond that a more vivid rationalization of the whole situation might have been successful. There are many cases in which his treatment merely supplemented with orthodox use of nitroglycerin to control the attacks, would have afforded him an opportunity to accomplish certain basic improvement in the patient's cardiac condition.

It should probably be interposed at this point, that there are many physicians who neither have the studious inclination, nor a clientele of people intelligent enough to cooperate fully nor the time to carry out in elaborate detail, the type of analysis implied when we speak of an adequately rationalized case management. It probably is proper also to reiterate that many patients seem to get along quite well (though not as well as they might ideally) on the somewhat empirical treatment that has worked out for general use. Lincoln made the statement that the Lord must have loved the common people because he made so many of them. It seems also that He provided that there should be evolved a common treatment for the common diseases because there are so many cases of them. Because human beings resemble each other so much more overwhelmingly than they differ from each other and because the environments in which the people in any one community live do not vary extremely, such stereotyped treatments for run-of-mine illnesses do develop. But individual cases of the same disease do differ.

One factor that does make people differ one from another in the matter of disease, is the occurrence of accidental osteopathic lesions from the mishaps of daily living. This makes the osteopathic physician's management of any disease possess a certain element of individualization because he recognizes the differences that exist between one person's problems and those of his neighbor, due to these lesions.

When our hypothetical patient comes to the rational osteopathic physician who sets no limit on the therapeutic procedures he will use except that they be for the patient's best interests, not today or tomorrow, but for the longest life span that is possible, this physician's first thought will be as to whether immediate palliative treatment is needed to carry the patient along until more basic therapeutic aims may be accomplished. This need will be determined by the severity of the attacks that the patient suffers and the frequency and ease with which they are precipitated. There will be cases where the use of nitroglycerin routinely at the very onset of each attack of pain will be essential to maintain the patient's confidence while the case is studied.

The next question is to determine by minute study of the case whether there are contributory pathologies of any of a varied group which are contributing to the difficulty and whether those pathologies are remediable so that ultimate significant improvement may be anticipated, or whether the pathologies are irreversible. Personally, I am convinced that the tendency is to place far too many cases in the irreversible group and to resign oneself to symptomatic treatment. This is due to a knowledge of medical pathology without understanding certain important osteopathic and nutritional concepts. For this reason, it is my feeling that an osteopathic physician should undertake every case, even though it requires temporary relief by palliative treatment, with the idea that by adequate care he is going to do something of substantial benefit for the patient. However, he must constantly guard against the deceptive influence on the patient's thinking that comes from the use of palliatives. Patients are too prone to accept them as giving genuine benefit instead of only temporary aid.

With a little elaboration now, I want to suggest the thinking of this rational therapist. His immediate thought, after he has taken care of the symptomatic phases of the problem, is the need of the cells of the myocardium for blood of the proper character at all times. He searches for some defect, in the machine we call the body which may be responsible for the blood flow being shut off instead of increased, at the moment some extra demand is placed upon the heart; or for the cause of a failure of augmentation of blood flow in response to the new need.

Many possibilities occur to him which may appear singly or in combination. The three major origins of a cardiac ischemia may be stated as follows:

1. Some pathological change in the coronary arteries themselves, or an abnormality in their regulation

2. Some inefficiency of the myocardium which results in its inability to bring about an adequate coronary circulation though the vessels themselves are not significantly involved

3. The failure of the heart to circulate enough blood through the coronary arteries because there is an inadequate return of blood to the right side of the heart due to some peripheral problem involving the general circulation.

In most attempts to analyze these cases, attention is concentrated on the coronary vascular problem too exclusively. It is known that large numbers of individuals who have had angina pectoris, and have died either from intercurrent disease or from fatal attacks of angina pectoris itself, present on autopsy practically no demonstrable change in the coronary arteries.

This may not be the rule but it happens with such frequency that one must give it attention.

It must be remembered that unless the left ventricle pumps enough blood into the ascending aorta with each heart beat and unless the vasomotor adjustment is such that a reasonable degree of blood pressure is maintained in the aorta, the coronary arteries will not carry an adequate amount of blood through the heart muscle, however normal the coronaries may be or however well they are regulated. Such a failure of the left ventricle to maintain adequate aortic pressure may be due to myocardial weakness from acute or chronic toxemias of bacterial origin, from degeneration caused by nutritional deficiencies, from tachycardias or arrhythmias. Inability of such a handicapped heart to respond promptly to increased demand may precipitate angina. Treatment may need to be directed toward the heart itself. It may require nutritional, antibacterial, supportive, or osteopathic manipulative measures. There may be, however, a vicious cycle in which the fault in the myocardium may be in part due to the very same inadequate coronary blood flow that comes from the failure of the left ventricle to discharge enough blood with each heart beat.

On the other hand, the whole vicious cycle may be, and often is, found to begin with an inadequate return of blood from the abdomen and lower extremities. The vessels of the abdominal organs in such cases may contain too much pooled blood. Kerr[7,8] has proved that a surprisingly large proportion of individuals complaining of angina pectoris can be entirely relieved by correcting this pooling of blood and its failure to return to the heart due to poor tone of the abdominal muscles, poor use of the diaphragm and thoracic muscles in breathing, and a generally poor postural status. The development of proper breathing mechanics and the cultivation of really adequate postural habits, aided by the temporary use of a properly fitted abdominal belt, have completely relieved the angina and restored health to several hundreds of his patients. Todd[9] of England has reported the same results in cases that eminent cardiologists had diagnosed as impending terminal coronary disease. This form of treatment is not effective, and may be harmful, unless the patient presents ptosis and diminished mobility of the diaphragm.

This postural and belt treatment with breathing re-education is not merely dependent upon the proper return of blood to the heart with a resulting mechanical assistance to coronary circulation; chronically pooled blood becomes perverted in composition and without question, the improved hepatic function, the lessened flatulence, and elimination of certain abdominal reflex factors, such as vagal drag, enter into the picture. Not only this, but in Kerr's later writings[10] on the subject, he records his appreciation of the fact that with the improved posture attained, the cervicodorsal spine and the upper ribs assume better positions which may remove certain sources of mechanical irritation of some of the sensory and sympathetic ganglia which are contributing to irritability of the cardiac reflex mechanism. This form of treatment is tremendously fundamental and, properly applied, would probably be one of the most effective means of prevention of coronary and myocardial degenerative disease, through improving both cardiac innervation and nutrition. However, there is still a large group in which the trouble has progressed too far or in which completely independent factors are at work which chiefly involve the faulty behavior of the coronary arteries.

I have implied that at times the coronary arteries themselves have actually become diseased and the case is progressing from a functional angina pectoris toward organic coronary occlusion. As a rule this is part of a general arterial disease and I will not in this discussion give specific attention to it. I have referred to the fact that coronary spasm occurs when there should be coronary dilatation. Osteopathic lesions as the basis of the disturbance of the cardiac innervation mechanism have been referred to, either as a result of postural defects, as the result of deviations secondary to primary traumatic lesions, or of primary traumatic lesions themselves.

I have personally produced by vertebral manipulation striking cardiac effects demonstrable by the electrocardiograph. Not infrequently there is a temporary or transitory imbalance between the parasympathetics and the sympathetics arising reflexly from disease of the gallbladder or gastric indigestion with distension. This may give a parasympathetic preponderance which may swing the balance toward coronary construction if some other apparently minor factor is added. In fact, anything tending toward a parasympathetic preponderance, possibly even an allergic state, may need consideration. Whatever is involved for the relief of such a parasympathetic preponderance becomes part of the necessary therapy.

There are many gaps in our knowledge of the regulation of the blood vessels but we know that in certain states tobacco smoking exerts a strongly vasospastic influence. At times this involves the coronaries and with certain individuals it is the determining factor between comfort and progressively increasing trouble. It is known that alterations in the ionic balance of the blood plasma, which supplies the fluid environment of the muscle and nerve cells, influence their irritability and contractile effectiveness; especially, inadequate utilization of calcium by the tissues predisposes to such hyperirritability. However, merely administering calcium (especially intravenously) without assuring its utilization, accomplishes little. Normal calcium metabolism is dependent on a generally sound state of nutrition. There is clear evidence that deficiency in vitamin E changes the oxidative mechanism of the heart, as part of a team of synergists involving other vitamins and phosphocreatins and minerals, so that again we see an urgent indication for the need of fully adequate nutrition in these cases. There is not space here to refer to the technics involved in nutritional diagnosis and in applying nutritional therapy and temporary vitamin re-enforcement. Basically these are substantially the same whether being utilized in the management of tuberculosis or of myocardial degeneration with angina or any other chronic disease. Our bodies are building new tissues to replace the old continuously. The diseased old tissue in our organs may be replaced by new vital tissue if the nutritional program is right. Recovery from organic disease is often possible.

The careful investigation of the psychosomatic aspects of angina also should be emphasized. When we consider the way in which neuron patterns can be built up to bring about persistently distorted function, we are impressed with the overwhelming importance of the proper operation of the integrative mechanisms

within the nervous system. We must not forget, however, that we have rather good evidence in the findings of our research workers that actual cellular changes are developed in various areas of the nervous system as a result of osteopathic lesions and that these areas of nerve cell change may determine the particular pattern with which a certain psychoneurosis expresses itself. This is a matter of organic nerve tissue change and not of the patient's emotionalism.

The positiveness with which certain particular shades of emotional experience uniformly accompany the precipitation of an anginal spell in certain patients makes it necessary to investigate carefully the possibility of such a factor by minutely analyzing the environmental circumstances, the train of thought, and emotional states that accompany or precede the attack. However, even though psychosomatic, the final mechanism is the same: defective circulation through the coronaries. Whether or not the development of angina pectoris is an intended escape mechanism, it would be possible to recite cases in which susceptibility to anginal attacks was the excuse for an individual's removing himself from a certain set of conditions which were emotionally distressing to him. I would still like to emphasize, however, that in a body with no structural defects, no toxemias, and no degenerative states that bear upon the coronary circulation, the mechanism of escape would be something other than angina.

Fatigue from long continued overwork has not been mentioned as a factor in angina pectoris. There is little question but that disorderly behavior of the nervous system which can be demonstrated in so many respects in fatigue may operate too in angina pectoris. Fatigue may bring on loss of respiratory efficiency because of muscular tire with the resulting syndrome of pooling of blood in the abdomen. It may take a combined form of muscular and vasomotor exhaustion with what Crampton[11] calls "blood ptosis." It may simply allow aggravation of poor posture with irritations from cervicodorsal strain. It may be that exhaustion of the adrenal medulla deprives the coronaries of the normal dilating effect of adrenalin which is supplied in response to activity or emotion. It may just be the rather universal tendency for the parasympathetics to preponderate over the sympathetics in states of fatigue. Still the elemental problem is that the heart muscle cells are suddenly in need of a supply of blood which fails to reach them.

The ramifications of these factors become very complicated. The gratifying thing is that if we do a few things successfully and well, the organizing faculties that seem to be resident in all living things, take over and look after the details for us. We cannot take time to elaborate but I urge you to let this idea become a part of your thinking. The failure of the body to make adequate responses to the demands placed upon it is tremendously dependent upon the body's being in some way mechanically out-of-order. Of course it is impossible for a body which is supplied with poor building materials, in the form of devitalized food or cloying excesses, to build itself a really proper form of bone, ligament, fascia, and muscle. This makes nutrition especially important when trying to create a mechanically sound body. But if one is a sufficiently skilled body engineer to be able to put every part, from the feet to the vertex, in proper position and is able to teach the patient how to keep each part working smoothly in the position where it belongs, by the proper use of his muscles, he will have laid the most necessary foundation for the recovery from disease and the maintenance of health. This of course is accomplished by a combination of osteopathic manipulative therapy, appropriate supports when there are bony inequalities or deformities, and dynamic postural training. But it cannot be done effectively in the individual whose life is not motivated by wholesome desires and capacity for normal enjoyments. Orthopedic surgeons have learned that the basis of good postural habits lies in the emotional attitudes of the individual.

Significantly, a strangely important position in the field of healing is reserved for the osteopathic physician. How much of the illness around us is dependent exclusively upon environmental factors and faulty nutrition and flaws of character and mind we do not know. But I am fully convinced that many individuals stigmatized as having psychosomatic problems and many with whom logical therapy fails, are the victims of accidentally acquired structural lesions which have not been discovered and corrected. For these the only complete service must include what can be done for them by members of the osteopathic profession. The challenge to our profession is to undertake and conduct studies that will identify the full range of importance of the etiologic influence of the specific type of lesion we recognize and to perfect methods of correction of these lesions by effective technics. Only thus can the osteopathic profession render the distinctive service that its founders visioned. The concept of the dependence of effective life processes upon the presence of appropriate and undamaged structures through which they may operate is a necessity for intelligent therapeutic planning.

SUMMARY

An appreciation of the basic principles (1) that living forces can operate effectively only through fit structures that are appropriate to the environment and (2) that structure, function, and environment are interdependent, is necessary to understand sound therapeutics.

Stereotyped medical treatment, even when based on superficial symptomatic diagnosis, will give symptomatic relief in a very large proportion of patients. Palliative and symptomatic treatment usually fails to remedy the intrinsic causes of disease and falls far short of the best service the patient might be given. Giving symptomatic relief may deceive the patient into believing he has been fundamentally benefited and make it difficult to get him to cooperate in a truly adequate program of care.

Palliative treatment may fail at times even to give relief from symptoms in certain groups of cases in which some complicating factor is present or some structural defect interferes with the customary response. Osteopathic methods are especially suited to atypical cases. Recognition of the need for structural fitness in certain important aspects is the basis of this distinctive merit in osteopathic practice.

To give the fullest degree of benefit to any patient, it is necessary to study the individual in the most comprehensive manner—the structural status of his body, the functional efficiency of his vital processes, the environmental influences he is or has been subjected to, and the habitual use or abuse to which he has subjected his body and his faculties.

It is then necessary to administer a program of treatment that will provide the patient with the correction of significant structural deviations, insure an optimal nutritional state, surround him with appropriate

environmental influences, and give him effective motivation. Even disease states which are usually considered inevitably progressive can be fundamentally corrected, not merely symptomatically relieved, by an adequate program of care built upon the specific findings and needs of the individual.

The physician should endeavor to group his cases into those whose actual recovery may be brought about and those in which he is ethically justified in limiting his efforts to the relief of symptoms.

Consideration of the analysis and care of the angina pectoris case furnishes an illustration of the principles of case study outlined and of their application in treatment.

609 South Grand Ave.

REFERENCES

1. Burns, L.: Studies in the osteopathic sciences: Basic principles. The Occident Printery, Los Angeles, 1907.

2. Boulding, K. E.: There is a spirit; the Nayler sonnets. Fellowship of Reconciliation, New York, 1945, p. 1.

3. Burns, L.: Pathogenesis of visceral disease following vertebral lesions. Committee on Research, American Osteopathic Association, Chicago, 1948, pp. 150-156.

4. Brunton, T. L.: On the use of nitrite of amyl in angina pectoris. Lancet 2:97-98, 1867. Quoted in Cardiac classics by F. A. Willius and T. E. Keys. C. V. Mosby Co., St. Louis, 1941, pp. 561-564.

5. Ruskin, A., and McKinley, W. F.: Comparative study of potassium thiocyanate and other drugs in the treatment of essential hypertension. Am. Heart J. 34:691-701, Nov. 1947.

6. Davis, D.: Spinal nerve root pain (radiculitis) simulating coronary occlusion; a common syndrome. Am. Heart J. 35:70-80, Jan. 1948.

7. Kerr, W. J.: Treatment of angina pectoris by methods which appear to promote more adequate filling of heart. Am. Heart J. 16:544-548, Nov. 1938.

8. Kerr, W. J.: New approach to etiology and treatment of angina pectoris (Mary Scott Newhold lecture). Trans. and Stud., Coll. Physicians, Philadelphia 7:162-170, June 1939.

9. Todd, A. T.: Treatment of some chronic and "incurable" diseases. John Wright and Sons, Ltd., Bristol, England, 1937, pp. 96-101.

10. Kerr, W. J.: Angina pectoris and postural emphysema, in Essentials of body mechanics by J. E. Goldthwait *et al.* Ed. 4. J. B. Lippincott Co., Philadelphia, 1945, pp. 114-130.

11. Crampton, C. W.: Gravity resisting ability of circulation; its measurements and significance. Am. J. Med. Sc. 160:721, Nov. 1920.

Postural Roentgen Study

A Review of 16 Years' Experience*

EUGENE R. KRAUS, D.O., F.A.O.C.R.
Attending Roentgenologist, New York Osteopathic Clinic
New York

Beginning in 1932 Schwab,[1] Hoskins,[2] and their co-workers published a series of articles which postulated the theory that a difference in the length of the lower extremities, as observed by roentgen studies taken in the erect position was an important cause of low-back pain. This was one of the great contributions to the science and art of osteopathic practice. The fact that the profession is today keenly interested in this subject shows that it has stood the test of years and that it is of enduring value in the management of the low-back problem.

Not only has the osteopathic school recognized the importance of the contribution of the short leg to low-back pain, but members of the older school of practice have also become conscious of it and many orthopedists are using lifts in the treatment of patients with low-back disturbances. Indeed, Frank Ober,[3] the distinguished orthopedist, recently stated that "The integrity of a joint depends on a normal alinement of the articular surfaces, strong ligaments and a normal musculature which moves and aids in supporting that joint. When disease, injury or postural abnormalities occur, this whole mechanism is thrown out of gear. The muscles which support and activate the joints lose tone and strength, with the result that additional burdens of stress and strain are thrown on the supporting structures and cause pain. If the pain continues, atrophy and spasm of the muscles increase and the disturbance is prolonged." In the Panel Discussion[4] following the presentation of Ober's paper a question was put to him concerning his opinion of the frequency of "tilted pelvis" and how often it is the cause of backache. The questioner stated that in his town there was an active osteopathic society with a roentgenologist and consequently the thought that patients have "tilted pelvis" was prevalent.

Ober replied that in 75 per cent of the old lame backs seen by him in the last year, some of them of as much as 25 years' duration, were due to tilted pelvis, that the condition is common and is usually due to short leg or an inequality between the ilium and the femur. He added that a lift under the heel until the spine is leveled cures most lame backs and that he once received $5,000 from a man who had spent thousands on his back. The patient commented, "Common sense is worth a lot of money."

Years ago, following talks by Schwab in this community, there were frequent requests to x-ray patients only in the erect position, anteroposteriorly. I have always taken the stand that unless a complete study is made of the lower back it is unfair to both the patient and the referring doctor because too many organic conditions may be overlooked. At the same time I have maintained that an x-ray study, except in cases of suspected malignancy or fracture, without the inclusion of postural studies, is equally unfair in the consideration of any low-back problem.

As early as 1932 I started x-raying patients in the erect position to determine the difference in leg lengths. In a paper delivered before the Milwaukee Convention in 1933[5] I mentioned a patient who had a right leg short by 11/16 of an inch. This patient was not x-rayed at first, and the referring doctor had mistakenly placed a lift under the opposite leg. Since that time and after studying at least 15,000 low-back cases, it is my impression that a complete x-ray study of each case is necessary.

It seems to me that short-leg problems fall into three categories: (1) that in which it is the primary contributing cause of low-back pain; (2) that in which it is a strong contributing cause, and (3) that in which it is present but is of no particular significance.

CASE REPORTS

The following case report will demonstrate the short lower extremity as a primary factor: This patient

*Presented at the Teaching Sessions on Osteopathic Technic, Fifty-Second Annual Convention of the American Osteopathic Association, Boston, July 20, 1948.

Fig. 1

Fig. 2

Fig. 1. Right femur top ½ inch lower than the left. There is a curve with convexity to the right and a sacral base inclination to the right. Fig. 2. Same case showing the difference in leg lengths almost completely corrected by the use of lifts.

complained that pain over the right sacroiliac joint was present all the time. There was no radicular extension. The pain was first noticed after exercise and, as this patient was quite an athlete, the pain interfered decidedly with her activities. She was seen first in April, 1935, at which time she had had pain for about 4 weeks. Ordinary treatment did not prove of value, although it had included several osteopathic manipulative treatments. In June of that year she still had pain and an x-ray study was done (Fig. 1). The only positive finding was a shortening by ½ inch of the lower extremity of the right side and a curve in the lumbar area with a convexity to the right. A ¼ inch lift was placed under the right heel and gradually the entire ½ inch correction was applied (Fig. 2). All of the patient's symptoms disappeared and she felt no pain for 9 months. At the end of this period while on vacation she ran barefoot on the beach. After repeating this procedure for 3 days her backache recurred, because of the difference in leg lengths when she was not wearing corrected shoes. Immediately on wearing a lift and discontinuing running barefoot, the symptoms disappeared. The patient was not seen again for 11 years. During all that time she had no pain. She had worn the lift until about 3 years ago; by then she could get along without it. There has been no recurrence of the pain. She was x-rayed again in 1946 and the difference in leg lengths was still present.

It seems to me that, from a clinical study, the diagnosis of this case is almost as exact as Koch's postulates as to the cause of an infection. In this case the patient had a bachache which did not respond to ordinary methods of treatment. A lift was applied; the pain immediately disappeared. The lift was dispensed with; the pain recurred. Careful x-ray study failed to show any evidence of organic disease of the spine and physical examination did not reveal any evidence of nerve involvement. Eventually the inflammation secondary to the faulty posture disappeared and the patient could get along without the lift.

The next case report will demonstrate the short leg as a contributing factor: The patient was a man 48 years old whom I had known for more than 30 years. Except for spraining his back in 1935 when he attempted to lift a car, he never had any low-back trouble. In March, 1948, he fractured his little toe and a splint was applied. In order to wear the splint satisfactorily he had to cut the toe from a shoe; hence he wore a tennis shoe on the injured foot and his ordinary shoe on the other foot. After walking around for about 2 weeks wearing heels of different heights, he developed an acute low-back disturbance. His back was so painful that he was examined by x-ray (Fig. 3) and found to have spondylolisthesis of the fifth lumbar vertebra, narrowing of the lower two spinal joints, and spina bifida occulta of the fifth lumbar and first sacral segments. There was only 1/16 inch difference in the tops of the femurs and the sacral base plane was level. When he wore one tennis shoe and one regular shoe the right leg was ⅞ inch lower than the left and the sacral base plane was ⅜ inch lower on the right than the left (Fig. 4). The patient was told to wear his regular shoes with heels and to cut out a portion of the toe so that he could wear the splint with comfort. Despite the fact that this patient had numerous congenital

Fig. 3. Level sacral base plane in an individual who, despite spondylolisthesis, has been free of backache. Fig. 4. Same case showing sacral base inclination of ⅜ inch to the right due to wearing tennis shoe on the injured side following a fracture of the toe. Severe back symptoms developed within a week. Fig. 5. Same case showing the spondylolisthesis. The patient had been asymptomatic previous to wearing shoes with a difference in the height of the heels.

Fig. 3

Fig. 4

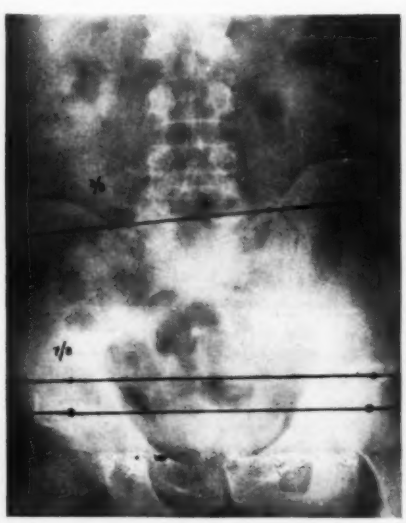


Fig. 5

Fig. 6 Fig. 7 Fig. 8

Fig. 6. Detailed film showing absence of bone changes on the sacroiliac margins and of calcified ligaments on the vertebral margins. Fig. 7. Same case. Marked difference in leg lengths, apparently the cause of low-back pain. Fig. 8. Same case. X-ray made 13 months later showing marked changes on the sacroiliac margins and calcification of all the lateral spinal ligaments on the right side. Similar changes were seen in the thoracic and cervical areas.

anomalies and arthritis, his symptoms completely disappeared within 2 days and at the time of this writing 2 months later he is without symptoms.

This is the type of case most frequently encountered, one in which there are several factors making the patient liable to low-back pain. In this case short-leg due to different heel heights was the precipitating cause. Frequently this type of patient needs treatment other than the simple use of a lift, mainly because such individuals move about on a short lower extremity for many years and, as a consequence, a mechanical type of osteoarthritis develops. Fortunately, in this case the patient was of a mechanical turn of mind, his occupation being that of an engineer, and he immediately considered the possibility that his changed footwear might be responsible for his pain. The cause for the difference in leg lengths was removed at once.

In a recent study of low-back pain I reviewed 500 cases and found that 72 per cent of them showed a sacral base inclination which usually indicated a short lower extremity.[6] This corresponds closely with studies previously made by Eggleston[7] and also with the percentage mentioned by Ober.[4] In the series of 500 cases[6] it will be noted that there were 27 cases with only postural defects. Of these only 2 cases (.04 per cent) were thought to be due to a difference in leg lengths alone, with no associated findings, whereas the combination of short lower extremity with other findings accounted for 72 per cent of the cases.

A third case report will demonstrate the type of low-back pain which, although associated with a short leg, has other findings so significant that the importance of the difference in leg lengths, so far as the disease process is concerned, is negligible. This patient, a 38 year old brakeman, was seen first in March, 1947. He worked in a Labor Battalion during the war and in 1944, while on Christmas Island, hurt his back. He was hospitalized for a while but the facilities for study were poor and eventually he returned to work. From Christmas Island he went to Midway where he hurt his back again. Finally he recovered and was transferred to Hawaii where he worked until 1945. During this time he was doing heavy work and had no back trouble. In 1945 he went to work as a brakeman on the railroad. He states that before he was taken in the employ of the railroad he had a thorough physical examination. He reports that he had an accident on the railroad and hurt his back about 4 or 5 months before I saw him. The pain did not become severe until 7 weeks before coming to my office. He saw his family doctor who said a nasal operation was necessary because of possible foci of infection. He went to see an osteopathic physician who helped him. His chief complaint was pain in the lower back and down the right leg to the middle of the thigh. His reflexes were within normal limits. The x-rays showed no particular disease of the bones and there was one slight osteophytic spur on the margin of the fourth lumbar body (Fig. 6). His right leg showed a ¾ inch shortening and the sacral base plane inclined 7/16 inch to the right (Fig. 7). When the patient stood there was a curve with a marked convexity to the right which disappeared when he lay down. There was a slight indentation on the inferior margin of the fifth lumbar body.

From the above, it would seem that here was an ideal case for lift therapy. No organic lesion was shown and there was a marked difference in leg lengths with a shift of the body to the side of the short lower extremity. It is true that this patient had a history of trauma which might suggest a herniated disk, but this possibility was slight because the patient's periods of feeling well between attacks seemed to be too long and varying. The patient was given lift therapy by the referring doctor and given regular osteopathic manipulative treatment.

A little over a year later the patient, who at first was relieved by the combination of a lift and osteopathic treatment, developed severe pain. In the interim he changed his occupation from that of brakeman to one requiring him to stand a great part of the time. In addition to the pains in the lower back and leg, there was now pain extending from the gluteal region to the

Fig. 9

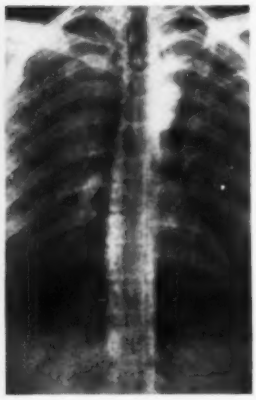


Fig. 10

Fig. 9. Marked difference in leg lengths in an individual whose chief complaint was pain in the dorsal area. Fig. 10. Same case. Curve in the dorsal area is a continuation from one in the lumbar region.

shoulders and chest and vague pains in several of the joints. A second x-ray study was made (Fig. 8). At this time there was noted marked condensation of bone on the margins of both sacroiliac joints with a suggestion of erosion interspersing the condensed areas. In addition there was observed calcification of the lateral spinal ligaments on the right side between the first and second, third and fourth, and fourth and fifth lumbar segments, thus giving a typical picture of a Marie-Strümpell type of spinal arthritis. All of this process had developed within 13 months. The sedimentation rate was extremely high, being 55 mm. in an hour, showing marked activity.

Thoracic studies show beginning calcification of the lateral spinal ligaments between the tenth and eleventh and the eleventh and twelfth bodies. The cervical study visualizes beginning calcification of the anterior spinal ligaments between the sixth and seventh cervical bodies. These areas of calcification of the ligaments are the areas in which the patient most recently has been having pain.

This case demonstrates that disturbances which seemed to be due to a mechanically weak back eventually were proved to be caused by ankylosing spinal arthritis. The correct diagnosis indicated treatment directed toward arresting the proliferative process rather than toward correcting the mechanical irregularity.

A fourth case is reported to demonstrate that even though a difference in leg lengths is present, it is not always of paramount importance. An unmarried man, 47 years old and a telephone installer, noticed considerable pain in his thorax, particularly when he carried the tools used at his work. During snowy weather the pain was exaggerated and he thought he had heart trouble. He had several infections during the winter. There were times when he could carry his tools and have no pain at all. He admitted that the pain frightened him. Later he noticed pain in the lower back. He was first seen in February, 1948. X-ray studies were made of the chest and the heart was well within normal limits; if anything, it was somewhat small. The study of the spine, in the erect position, showed the femur top on the right side to be 1 inch below that on the left (Fig. 9). There was a sacral base inclination of ¾ of an inch to the right and a marked shift of the entire spine, from the sacrum to the occiput, to the right of the median line which bisects the pubic symphysis. There was a curve with a convexity to the right which extended from the sacrum as high as the third dorsal vertebra (Fig. 10). The oblique views showed moderate osteoarthritis. There was no marked evidence of disease of the ribs. The lumbar lordosis was somewhat exaggerated.

This case seemed to me a perfect example of one in which the short leg was the primary factor and this may still prove to be so. However, about 4 months after seeing this patient I conferred with the referring doctor and asked how the patient was faring. When informed that he was now symptom free, I asked how much of a lift he was wearing. Much to my surprise, I was told that he had not been given a lift since the doctor felt that many individuals approaching middle life adjusted to the variations caused by a short leg and that sometimes a lift made them worse. This patient had done so well without a lift that one had not been tried. The doctor stated if symptoms recurred a lift would be tried, gradually increasing its height. It seems to me that this case shows that we cannot be too dogmatic about any single type of therapy. Although this patient was not using a lift, he responded well to treatment.

TECHNIC FOR STANDING X-RAYS

I have been asked to explain the technic used in taking standing films. In the first place I wish again to emphasize that in my office we never make standing films only. X-rays are made with the patient erect and supine in the anteroposterior position, erect and recumbent in the lateral position. In addition oblique exposures are made, usually in the recumbent position. This gives a complete survey.

In the standing films, where possible, the patient stands on a level platform. A wire down the center of the Bucky diaphragm is, in the majority of cases, visualized as a line which bisects the pubic symphysis. The patient's body is centered with this line and, if the knees do not touch, a plumb line will bisect the midheel line (Fig. 11). In many cases placing the heels together causes the knees to touch and throws the body off center (Fig. 12). In such a case we turn the toes in and bring the knees parallel to each other, as close as is comfortable (Fig. 13). The tops of the ilia are opposite the center of the cassette. The x-ray technic

Fig. 11. Usual position for taking films in the erect position with the heels meeting in midline. Fig. 12. Genu valgum where the midheel line is inexact because the knees touch. Fig. 13. Correct position, with genu valgum, with the feet parallel and the knees as close as possible, but not touching.

Fig. 11

Fig. 12

Fig. 13

employed is that which is best adapted to the size of the patient and the type of machine being used by the doctor.

CONCLUSION

The difference in leg lengths is a very important factor in the treatment of low-back complaints and other types of postural irregularities. Credit for this discovery goes to Schwab who, according to Beilke,[8] made known this finding as early as 1921. Since then its importance has been verified clinically thousands of times and has been accepted frequently by outstanding authorities of other schools of medicine. The application of lifts to the correction of a difference in leg lengths has been so successful that many times they have been used with an excess of enthusiasm. As Strachan[9] stated as far back as December, 1941, "Their use is neglected by some and overemphasized by others."

The purpose of this paper is to re-emphasize Strachan's statement and to say that, after x-raying over 15,000 spines in the past 25 years, I feel there is no short cut to accurate diagnosis. Each case must be studied thoroughly, both clinically and by the laboratory. In each there should be a complete x-ray study, part of which should be a comparison of the respective heights of the femur tops in the erect position.

I have attempted to classify the difference in leg lengths into three categories: (1) that in which the short leg is the prime contributory cause, (2) that in which it is an important contributory factor but associated with other abnormalities, and (3) that in which other findings are so important as to make the difference in leg lengths insignificant.

59 East 54th St.

REFERENCES

1. Schwab, W. A.: Principles of manipulative treatment—the low-back problem. J. Am. Osteop. A. 31:165, Jan.; 216, Feb.; 253, March; 292, April; 353, May; 384, June; 478, Aug., 1932; 32:89, Nov. 1932; 179, Jan.; 223, Feb.; 260, March 1933.

2. Hoskins, E. R.: Development of posture and its importance: The short leg. J. Am. Osteop. A. 34:125-126, Nov. 1934.

3. Ober, F. R.: Physical medicine and the lame back. J. Am. M. A. 137:133-134, May 8, 1948.

4. Panel discussion on physical medicine. J. Am. M. A. 137:139-140, May 8, 1948.

5. Kraus, E. R.: Common errors in interesting cases of general osteopathic practice. J. Am. Osteop. A. 33:427-430, June 1934.

6. Kraus, E. R.: Clinicoradiological consideration of low-back pain; based on statistical analysis of 500 cases studied radiologically in osteopathic practice. J. Am. Osteop. A. 47:308-318, Feb. 1948.

7. Eggleston, A. A.: Basis for diagnosis of low-back conditions. J. Am. Osteop. A. 41:180-190, Dec. 1941.

8. Beilke, M. C.: Simple mechanics of sacrolumbar group. J. Am. Osteop. A. 39:165-167, Nov. 1939.

9. Strachan, W. F.: Lateral imbalance and use of lifts. J. Am. Osteop. A. 41:190-192, Dec. 1941.

Soft Tissue Changes That May Follow Postural Defects*

ANGUS G. CATHIE, D.O.
Professor of Anatomy, Philadelphia College of Osteopathy
Philadelphia

From a mechanical point of view, "the ideal posture is one in which the different segments of the body, head, neck, chest, and abdomen are balanced vertically one upon the other so that the weight is borne mainly by the bony framework with a minimum of effort and strain on muscles and ligaments." Bowen[1] quotes this definition of ideal posture from the American Posture League.

For such posture to be maintained special postural muscles must be in a state of constant activity. McGregor[2] calls attention to the postural activity of certain muscles. These he describes as ". . . muscles which are concerned in keeping the trunk erect, have a special physiological property called 'postural activity.' This implies that their activity is constantly greater than that of other muscles which do not participate in this quality. These muscles are the sacrospinalis, glutei, quadriceps, sartorius, and to some extent, the calf muscles." It has been suggested that a special center in the cord controls this activity. Although this group of muscles has been so mentioned it does not mean that other muscles of the body do not play an important part in assisting in the maintenance of correct posture.

Correct posture is one in which the head is centered over the pelvis, the face directed forward, and the shoulder girdle approximately on the same plane as the pelvis.

The spine of man is very similar to that of quadripeds which, with some slight structural modifications, has been placed vertically. Increased muscular activity is required and the strains placed upon the spine are greatly increased. New and more complicated motions have been made possible through new duties assigned to pre-existing muscles. The viscera are, in general, suspended parallel to the long axis of the body. Inspiration requires that the thorax be elevated, while some of the arterial blood and much of the venous blood has to be lifted. Truly, man, as described by Hooten,[3] "is a made-over animal," and, it may be added, one that must continually fight gravity. Few spinal deformities have been reported in quadripeds whose spines are supported by four pillars and whose ribs and viscera are, generally speaking, suspended at right angles to the horizontal spine. Nature's effort to keep the eyes on the same horizontal plane and the shoulders above the pelvis contributes to some of the changes found in postural cases. According to Lovett,[4] "This adjustment, especially the element which seeks to keep the shoulder-girdle in the same plane as the pelvis while disturbances twisting the column below are taking place, is an important factor in explaining the phenomena of scoliosis." Regardless of the changes that take place there must be a continual compensation which will enable the center of gravity to be held over the center of support.

The individual with poor posture may be described as one whose head is carried forward, whose scapulae are held in abduction giving the shoulders a rounded appearance, whose dorsal curve is increased, and whose chest is flattened. Lordosis and prominence of the anterior abdominal wall below the level of the umbilicus is accompanied by an anterior tilt of the pelvis. The knees are slightly flexed.

Even the slightest alteration in the normal balance of the various spinal segments is accompanied by some degree of soft tissue change. Nature automatically attempts to restore equilibrium through the production of such changes as the contraction and

*An Academy of Applied Osteopathy paper provided by the Harry L. Chiles Memorial Fund. Delivered before the Annual Convention of the Maine Osteopathic Association, June 14, 1947.

eventual shortening of some muscles, lengthening and loss of normal tonus of others. Corresponding changes are present in the associated ligaments with low grade articular and periarticular inflammation, and later actual productive bone changes may take place. More numerous minor, and perhaps less spectacular, changes take place in the perivascular and perineural tissues; yet these are capable of disturbing the function of the body to a marked degree. The various abnormal curves often seen are but gross evidence of what is taking place and should not be permitted to overshadow the minor ones capable of producing more obscure symptoms. Poor posture may not produce immediate pathological symptoms but must be considered as a potential cause of trouble later. The necessity for surgical treatment of many visceral pathologies may be removed if the postural defects responsible for the altered visceral function are removed.

As a rule, whenever the origin of a muscle is brought nearer its insertion, it undergoes shortening and is an important factor in maintaining deformity. Their change precedes articular change in the majority of instances. When the spinal musculature is involved in lateral curvatures, there is shortening of the ligaments and muscles on one side and lengthening on the other. The direction of muscular pull is altered, in some instances to such a degree that its position is far from normal. In severe cases or those of long standing more marked changes may be seen. Shortened muscles may undergo fatty degeneration, some become fibrous, and if in its altered course the muscle passes over an osseous surface, it may become tendinous. The limitation of motion characterized by the stiffness of the region results in atrophy of disuse. On the side of convexity of a scoliotic spine the more characteristic change is a fibrous one.

In discussing muscular pain, Schmidt[5] states that in the general pathology of this complaint, the fact should be emphasized that the chief site of sensation is probably to be found in the connective tissue framework rather than in the parenchyma of the muscle. It is most highly developed in the tendons and aponeuroses, and the pain often extends to these. In the consideration of myalgia that accompanies postural defect these facts must be taken into consideration. The most important indication of a myalgic pain is the elicitation of pain over the muscle when pressure is applied and pain which is increased on passive stretching or active contraction of the muscle.

The fascia of the body is closely associated with the muscular system. It forms investing sheaths for muscle groups, individual muscle sheaths, and is often the actual site of muscular attachment. Specializations of dense, thick fascia are associated with the postural muscles and play an important part in the maintenance of normal posture. It forms stress or tension bands in some regions as, for example, the iliotibial band of the fascia lata in the thigh, and the lumbodorsal fascia. The former is concerned with the stability of the hip and the knee, and the latter with the trunk. Fibrositis refers to a local or general inflammation of fascia, the sheaths of muscles, intermuscular septa, ligaments, aponeuroses, and tendons. When present there is often pain over the joints accompanied by stiffness, pain during muscular activity, and muscular weakness. When the more superficial fascia is involved, some induration may be detected beneath the skin. The pathological changes described may be followed by changes in the associated cartilages and bones.

Limitation of muscular activity and restriction in the range of joint motion is accompanied by a decrease in the flow of blood and lymph. This is especially true of the venous blood and lymph which depends to a large extent upon muscular activity for its propulsion. The importance of lymphatic flow and the value of manipulative treatment in promoting it has long been taught by the osteopathic profession. The following quotation from Drinker and Yoffey[6] resulting from their intensive studies of the lymphatic system is most interesting: "Massage, passive movement, and posture affect lymph flow under normal conditions. . . . It may, however, be well to point out here to persons treating chronic inflammatory conditions—in which fibrosis is sure to advance if tissue fluid and lymph remain stagnant in the part—that massage in the direction of the lymph flow is preëminently the best artificial measure for moving extravascular fluid into lymphatics, and for moving lymph onward toward the blood stream." It is also pointed out that this form of treatment is better than that which uses mechanical devices for the stimulation of lymphatic flow. In postural cases where muscular activity is limited, congestion of the tissues to some degree will be present.

Postural changes are also accompanied by alteration in visceral support and position. A lengthy list of these could be made, but two structures responsible for defective visceral position and function should be mentioned at this time—the peritoneal specializations and the diaphragm. The former, as well as furnishing visceral support, also conduct the neurovascular elements of the viscera. With the abnormality of the spinal curve in the lumbar region there results a relaxation of the mesenteric and mesocolic attachments. This is followed by mesenteric and mesocolic drag as the attached viscera assume a low-lying position. Retardation in the circulation follows with chronic passive congestion, accompanied by changes in the vasomotor and visceromotor activity. The decrease in the diameter of the thoracic cavity that results from the sag of the ribs brings the origin of the diaphragm nearer to its insertion permitting it to relax. Respiratory activity is then decreased with changes in the thoracic and abdominal cavities. The structures above the diaphragm show the effects produced by the lowering of the diaphragm. Tension upon the pericardium, heart, and associated vessels and nerve plexuses complicates the picture and may give rise to symptoms referable to the lungs, heart, or vascular structures of the neck. Pressure of the abdominal viscera upon one another and upon the anterior wall of the abdomen follows because of the lowering of the diaphragm. Pressure is directed on downward to the pelvic viscera which, because of the altered sacral position, have lost much of the protection normally offered by the sacrum.

As has been pointed out, the flow of venous blood depends to a great extent upon normal muscular activity and fascial tension. The large veins of the abdomen pass through and are attached to the diaphragm, the motion of which is of greatest importance in moving the blood within these veins. Restriction of diaphragmatic action is then capable of increasing the chronic passive congestion of all of the venous channels below this level.

The erect position of man has been of no aid in giving support to the pelvic floor and its related viscera. Excepting the sacrum and coccyx, the rectum depends upon the surrounding soft tissues for its support. The urinary bladder and, in the female, the uterus depend upon the integrity of the pelvic floor for their position, as is shown in cases in which they have been deprived of proper perineal support. These same organs of the lower abdomen and pelvis may, in cases of poor posture, exert abnormal pressure on the pelvic floor and the vascular structures running through the pelvis. The structures supplied by and drained by these vessels are liable to become the site of chronic congestion.

I have spent many hours discussing the applied anatomy of this region with Dr. Enrique Vergara of Philadelphia, learning at first hand the impressions of an osteopathic proctologist concerning the part played by altered body mechanics in the production of rectal disease. He has made the following observations on many of his patients. Lesioned areas of the spine are frequently found below the level of the sixth dorsal vertebra, and patients suffering from postural defects involving the lower dorsal and lumbar region frequently have rectal disease of some type. Many of these patients have been found to have pain in the perineal area, lower abdomen, and thigh. Pain in these areas is especially frequent in those having pelvic asymmetry, a short leg, or alteration of vertebral mechanics in the low back. It is his opinion that a histopathologic condition of the connective tissue of these areas exists and that altered lymphatic drainage of these parts is partly responsible for the pain distribution. The lymphatic vessels of these areas are connected. The longer the conditions have been present, the more liable is this distribution of pain to be found.

Postural disturbances are frequently accompanied by conditions we hear described by such terms as myositis, fibrositis, and myofascitis. According to definitions found any of these conditions may exist, but, due to the relations that exist between the muscles and the connective tissues, the term "myofascitis" is probably the more accurate, especially if the condition has been present for a period of time. Changes within the tissues are usually already present and require some slight trauma to make their presence known. The sudden twisting of the involved muscles and fascia, sudden tension, or the breaking of adhesions, may precede the onset of the severe and sudden pain. drive the unfortunate individual from one physician Untreated, the condition tends to become chronic and to another.

Toxic products in the circulating blood and lymph have been mentioned as the cause of some cases of myofascitis. This condition frequently attacks the postural muscles especially the sacrospinalis, glutei, and hamstrings. It is often misdiagnosed as sacroiliac disease when the attachments of the sacrospinalis and glutei are the site of the pain. It does not follow the characteristics of peripheral nerve lesions because the distribution of the pain does not follow such a pattern. The frequency with which it is confused with sacroiliac disease is due to the fact that this articulation lies deep in this area. However, it should be recalled that the pain is over the posterior part of the ala of the ilium, the sacrum, and often over the lumbosacral junction.

The piriformis muscle, which crosses the sacroiliac joint, and its associated fascia are often the site of this painful inflammatory process. Branches of the sacral plexus may be bound to these structures by adhesive bands causing sciatic pain. The condition is more often found to be left-sided. If these muscles are put on tension, as in lifting the extended lower extremity, pain will be found at the points of attachment of these structures which are anchoring the lower extremity to the trunk. When piriformis spasm is present, it may be accompanied by limitation of internal rotation of the extended thigh. Extreme tenderness will be elicited midway between the greater trochanter and the tuberosity of the ischium.

Not only may these changes produce low-back, gluteal, and sciatica pain, but the pelvic floor may become the site of muscular spasm involving the levator ani and the coccygeus muscles. In coccydynia such spasm is not uncommon. It is not my purpose to discuss the detailed descriptive anatomy of these parts here but I strongly recommend their study by any not fully versed in the mechanical relationship of the parts and the inter-relation of the systems represented.

In many of these patients painful contraction of the muscles and fascia of the lower extremity will be found. These are evidences of an attempt on the part of nature to hold the superimposed trunk in proper position and to maintain equilibrium on the rounded femoral heads. The middle portion of the lateral part of the thigh is a point of marked pain upon palpation. This corresponds to the region where the tensor fascia lata enters the iliotibial band from above and in front and the gluteus maximus from above and behind. These are important structures concerned with locomotion as well as stabilization of the hip and knee. The sartorius is usually found to be contracted and painful; in some instances its upper part produces a prominence below the anterior superior iliac spine. Its shortening accompanies the anterior tilt of the pelvis, a position the shortened sartorius helps to maintain. Below the knee painful areas are found in the belly of the gastrocnemius and tibialis anterior. Because weight is improperly delivered to the foot, an added burden is placed upon it, with the result that it is the site of painful bony and muscular lesions. The midtarsal joint will be altered and will complicate further the effort being made by nature to compensate for its mechanical difficulties.

The value of erect x-ray studies in postural disorders is familiar to all of us as is the lift therapy which is so frequently indicated. When therapy in these cases is limited to the use of lifts, the results are often disappointing. The alteration in vertebral alignment is present in some degree throughout the entire spine and is accompanied by alteration of ligamentous and muscular tension. Compensation has taken place in the periarticular structures. The introduction of a lift may be accompanied by such a change in the already altered mechanics of the spine that pain and tenderness may be experienced by the patient along the entire spine. Unless this is understood by the patient, he may become discouraged and discontinue the use of the lift. Lift therapy without the administration of proper manipulative treatment is unsatisfactory in almost all cases. Aid in the re-establishment of normal vertebral mechanics is required if the most satisfactory results are to be obtained. The necessity for manipulation is obvious in view of the tissue

change that is known to exist. The reaction to the lift will vary in proportion to the extent of the changes present.

Because of time limitations, I have been able to discuss tissue changes only in a general way. I have endeavored to point out the interrelations that exist between the various systems of the body with the hope that a more complete picture and understanding of postural changes may result.

48th and Spruce Sts.

REFERENCES

1. Bowen, W. P.: Applied anatomy and kinesiology. Ed. 5. Lea & Febiger, Philadelphia, 1934, p. 268.

2. McGregor, A. L.: Synopsis of surgical anatomy. Ed. 5. Williams & Wilkins Co., Baltimore, 1943, p. 153.

3. Hooton, E. A.: Apes, men, and morons. G. P. Putnam's Sons, New York, 1938.

4. Lovett, R. W.: Lateral curvature of the spine and round shoulders. Ed. 4. P. Blakiston's Son & Co., Philadelphia, 1922, p. 43.

5. Schmidt, R.: Pain. Ed. 2, translated by Hans Zinsser. J. B. Lippincott Co., Philadelphia, 1911, pp. 126, 127.

6. Drinker, C. K., and Yoffey, J. M.: Lymphatics, lymph, and lymphoid tissue. Harvard University Press, Cambridge, Mass., 1941, p. 310.

Psychosomatic Problems in Surgical Practice*

PAUL R. KOOGLER, D.O.
Kirksville, Mo.

It has often appeared to me in my occasional moments of critical introspection that to be a good surgeon, one must possess a dual personality, for certainly there are two distinctly different and yet related qualities which the surgeon must possess. First of all, the surgeon must be a good diagnostician. It is often not the operating technic that makes the outstanding surgeon, but the discernment which enables one to decide when and why surgical intervention is necessary. Happy is the surgeon who in the majority of his cases can have his preoperative diagnosis confirmed by the pathologist. The other ability that the surgeon must possess is, of course, a deft and skillful operating technic. Every surgeon who has the interest of his patient at heart yearns to develop to the greatest possible degree methods of invading the human body with the least amount of trauma and insult to that body.

When asked to present this discussion of psychosomatic factors in surgical practice, I conceived the idea that these problems also are dichotomous; that is, certain psychosomatic problems are chiefly diagnostic, while others are in the main problems that develop in connection with the actual operations. I hope you will agree that this is a method of dividing conveniently, for purposes of discussion, the many emotional problems which one meets in general surgical practice. Since it is impossible to cover thoroughly the field of psychosomatic surgical problems in the time allotted me, I shall content myself with the presentation of some of the more common conditions in each of the two categories which I have set up.

DIAGNOSTIC PROBLEMS

Particularly in the Midwest, in the so-called "goiter belt," many general practitioners and even some surgeons are "thyroid conscious," and are apt to think of thyroid disease every time they meet a presenting complaint of easy fatigue, anxiety, nervous excitability, and weakness. This trend is so prevalent that in a recent survey of 150 cases of psychoneurosis, A. E. Bennett[1] found that 16 of the patients had had thyroid surgery. This is an incidence of unnecessary surgery in excess of 10 per cent, considering only thyroid operations. Parenthetically it might be mentioned that these patients had undergone a total of 244 operations and 496 forms of medical treatment before they were finally considered from the psychosomatic point of view. My associate in the Division of Psychiatry recently had under his care 3 patients with a diagnosis of neurasthenia all of whom had had thyroid surgery, obviously without change of symptomatology.

Even in the "goiter belt" such diagnostic errors are unforgivable. The thyroid disease produced by lack of iodine is simple colloid goiter. It is a slow, diffuse, painless enlargement occurring usually in the teens, without any symptoms other than those of pressure.

The condition which doctors probably have in mind when they mistake a neurasthenic reaction for thyroid disease is the type of hyperthyroidism usually referred to as exophthalmic goiter, or Graves' or Basedow's disease. The two differential points of greatest significance are the increased basal metabolic rate and the characteristic eye signs. In Graves' disease basal metabolism may be raised 50 to 150 per cent above normal, while in neurasthenia it will be only slightly increased, and instead of having an increased appetite to compensate for the increased oxidation seen in Graves' disease, the appetite of the neurasthenic patient is poor or at least somewhat capricious. Exophthalmos, lagophthalmos, and von Graefe's sign, all characteristic of Graves' disease, are not seen in the neurasthenic patient.

Even if the basal metabolic rate is increased, and the condition seems to be one of hyperthyroidism, I believe that the recommended treatment for the condition is not immediate surgery, but physical and mental rest for an extended period. Why must surgeons feel that it is necessary to rush the patient to surgery? These cases do not constitute surgical emergencies even if the surgeon is certain of his diagnosis of hyperthyroidism. Certainly a period of conservative treatment is justified, and this period will give the doctor time to study his patient and that patient's life situation. It may well be that even "certain" diagnoses will need to be changed in the light of the additional information which such studies provide. On this point, remember that Martinet[2] wrote "Nothing is sure, not even that which is certain."

Another rather common presenting complaint in surgical practice is that of pain in the lower right quadrant. Now, when the pain is accompanied by the usual physical and laboratory findings of acute appendiceal inflammatory disease, none of us questions the necessity of surgical intervention, and the sooner the better. But when a patient walks into the office alone or accompanied by a parent or spouse and complains of lower right quadrant pain with a history of vague pains in that area for several years (par-

*Presented at the Neuropsychiatric Teaching Sessions at the Fifty-Second Annual Convention of the American Osteopathic Association, Boston, July 21, 1948.

ticularly if the pains "radiate" in any direction), it is usually a mistake to jump at a diagnosis of "chronic appendicitis." Alvarez[3] in 1940 reported studies of the histories of 385 patients on whom he found lower right quadrant scars from appendectomies. Of 225 patients in this group who never had an acute attack of appendicitis, *only two* were cured of their abdominal pain by the operation. He is convinced of the need of showing physicians the almost complete hopelessness of performing appendectomy in patients having no history of acute attacks, and also that appendectomy cannot be expected to cure fatigue, constipation, diarrhea, ulcer, mucous colitis, or any of the neuroses.

The importance of psychosomatic study in patients with pain in the lower right quadrant and no history of acute attacks cannot be overemphasized. This is especially true if the patient says that the pain "radiates around to the back and down the legs," or "passes up the spine to the head." A careful investigation of the patient as a person, by means of a psychosomatic history and subsequent personality study, will usually make the presence of a psychoneurosis apparent even to the inexperienced individual.

Another surgically maligned organ is the uterus —or perhaps that statement should be broadened slightly to include the ovaries, which frequently suffer at the hands of too eager or too inexperienced surgeons. Many times I have examined young women who have been subjected to hysterectomy or oophorectomy for what appeared to me to be inadequate cause, and usually without change of the symptomatology. Often a second operation had been performed, usually for "adhesions" and still the patient had her symptoms. Otherwise she would not have been at our clinic for examination. On this point, Weiss and English give a quotation from Clifford Albutt's[4] "Visceral Neuroses," which although written in 1884 is still worth repeating: "A neuralgic woman . . . is entangled in the net of the gynecologist who finds her uterus, like her nose, is a little on one side, or again, like that organ, is running a little, or it is as flabby as her biceps, so that the unhappy viscus is impaled upon a stem or perched upon a prop, or is painted with carbolic acid every week in the year. . . . Her mind, thus fastened to a more or less nasty mystery, becomes newly apprehensive and physically introspective and the morbid chains are riveted more strongly than ever. Arraign the uterus, and you fix in the woman the arrow of hypochondria, it may be for life."

We have seen too many women who have had uterine suspensions, cervical dilations, and even hysterectomies because of a complaint of dysmenorrhea or other pelvic pain without any change of symptomatology. We cannot but believe that the financial considerations influenced the surgeons either consciously or unconsciously in their decisions to intervene in these cases. A recent case from our own files illustrates the extremes to which pelvic surgery may be carried:

K. H., a white female aged 34, complained of pelvic pain and cramps. History revealed that she had had cramps all her life. At the age of 24 she was operated on for cystic ovaries. Cramps continued. She was subsequently subjected to two more operations for cystic ovaries. Cramps continued. In 1946 fallopian tubes and ovaries were removed. Cramps continued. In 1947 a subtotal hysterectomy was performed. A year later the cramps returned! Here is a still young woman who has had her pelvic organs operated on five separate times—and she still has her complaint of pelvic pain.

When will we learn that the somatic reflections of emotional conflict cannot be cut out of the body with the scalpel? The patient discussed above was referred to the Division of Psychiatry and it is expected that she will respond to psychiatric management. Think of the happiness she might have had if she had been given the benefit of a psychosomatic study when she first consulted a physician because of pelvic pain and cramps.

As a final example of the psychosomatic problems of surgical diagnosis, I should like to discuss briefly my experience with cases in which the presenting complaint was some form of upper right quadrant pain, often accompanied by chronic dyspepsia. Admittedly one of the most frequent causes of dyspepsia is gallbladder disease, and certainly no one questions the advisability of surgical intervention when the patient is "fair, fat and forty" and has a history of repeated attacks of gallstone colic with supporting roentgen evidence. But what of the so-called "noncalculous" cases? During the past year, I have reviewed 2 cases in which the presenting complaint was right-sided substernal pain and dyspepsia. On roentgen examination these patients showed no evidence of stone, although the roentgenologist reported findings suggestive of gallbladder irritation. Since both these patients were in the 20's and had had no acute attacks, psychiatric consultation was requested. In both instances, an investigation of the personality and environmental factors brought out the real etiology of the presenting complaints. These cases aptly illustrated that emotional disturbances may and do select the upper end of the gut tract for a somatic outlet. Since the liver and gallbladder are derived from this portion of the embryonic gut tract and have the same nerve supply, they will reflect functional disturbance directed to this area in the absence of organic disease.

OPERATIVE PROBLEMS

One of the most common emotional problems occurring in connection with surgical considerations is that of preoperative anxiety. One might think that the surgeon, out of genuine interest in his patient, would do everything in his power to see that the patient is free of anxiety before going to surgery. Or failing that, he should want his patient free of anxiety and relaxed because such a patient would be a better surgical risk. Yet I have seen surgeons who operate on an assembly-line basis. They come to the hospital, ask to see the new admissions on their service, pop into the patient's room after looking at the case history and examination report prepared by the intern and resident, give the patient a cursory examination, and say to him, "Yes, it has to come out. You'll go to surgery tomorrow morning at 8." Out he goes and doesn't see the poor victim again until the well-draped form is wheeled into surgery the following morning. I recall one such occasion on which the patient, a middle-aged female scheduled for cholecystectomy, was so apprehensive that she was in tears. "Take her back to her room," the surgeon bellowed, "I can't operate on anything like that!"

Aside from the fact that such an attitude shows a strange lack of feeling for the patient as a human being, it seems to me that proper psychological preparation for surgery is as necessary to insure good operating risks as is good preoperative preparation and

a good anesthetist. No patient should enter the surgical amphitheatre who has not had all the pertinent facts about the operation explained to him in a way that he can understand. He should appreciate not only the reasons for the proposed surgery, but the benefits he may reasonably expect in the way of improved health after recovery. He must feel confident that his surgeon is capable in his field and has a personal interest in him as a patient. Finally, and of utmost importance, he must anticipate a satisfactory result from the surgery.

The use of preoperative sedation or narcosis is often helpful in relieving the tension that most of us feel before any ordeal, but it is not a satisfactory substitute for psychological preparation of the patient before surgery is scheduled. And even preoperative narcosis has been carelessly used, especially in patients showing extreme apprehension. The amount of medication necessary to allay the anxiety in some patients is so great that when combined with the effect of the anesthetic, there results a systemic toxicity which greatly adds to the postoperative dangers. I have seen postoperative psychoses which were directly traceable to this unwise use of medication. I have also learned that there is a direct connection between postoperative atelectasis and excessive preoperative medication.

Closely allied to the problem of preoperative psychological preparation of the normal patient is the problem which confronts the surgeon when he finds it necessary to operate on a patient with a definite history of emotional instability, or even a frank psychoneurosis. I should like to mention parenthetically that only a thorough psychosomatic history previous to surgery will disclose such deviations in stability. But assuming that the surgeon adopts the psychosomatic approach with all his patients, what procedures may he safely follow in order to obviate complication or exaggeration of the already existing problem?

At least four, and preferably six, weekly sessions should be spent in preparing the patient for surgery. The surgeon must understand something about the personality of the patient and his attitudes toward life. Then something must be learned about his attitudes toward operations in general. In this procedure it is better to listen than to do too much talking. Let the patient ask plenty of questions, and let him thoroughly air his feelings. It is essential that the ideas about proposed surgery be wholly divorced from the mechanisms of the psychoneurosis. He should also understand thoroughly that the surgery will have no influence, for good or ill, except as specifically delineated by the surgeon; in other words, surgery will not cure neurosis. During this preparatory period the patient acquires confidence in his surgeon as an understanding friend as well as a skillful operator.

A period of postoperative psychotherapy should also be planned. It is unwise to operate on psychoneurotic or emotionally unstable persons unless arrangements can be made for the continuation of therapy after discharge from surgical service. Sometimes it is wise to refer the patient to a convalescent home for 2 or 3 weeks immediately following discharge. Among clinical groups such as ours, it is customary to have the department of psychiatry work with us on these cases, and the psychiatrist does most of the preoperative and postoperative psychological conditioning.

Finally, I wish to speak of those occasional embarrassing situations in which syndromes which we have thought to be largely psychogenic are proved to have an adequate physical basis. Two cases from my own experience will serve to illustrate:

A. R., a white female in the early 30's, complained of rather generalized abdominal pain, most severe in the upper right quadrant. She has a history of appendectomy, cholecystectomy, and laparotomy for adhesions. Results of laboratory studies were negative; pulse, temperature, and respiration were normal. The lack of objectivity and specificity in her description of her symptoms, and her tendency to make the most of every opportunity to talk about her pains and troubles made it difficult to believe that the cause of her complaint was primarily organic. The results of roentgen studies of the gastrointestinal system were negative. Psychiatric study was refused by the patient, and I was reluctant to operate without such consultation. A colleague of mine suggested the possibility of recurrent adhesions. I was unconvinced, but replied that if he believed in his diagnosis I would turn the case over to him for surgery. He operated and found a mass of adhesions forming a band from the inferior border of the liver, passing to involve the greater omentum, and attaching to the anterior abdominal wall over the appendiceal area. Removal of the adhesions and early ambulation resulted in a symptom-free patient!

J. N., a white male in the late 40's, presented a complaint of periodic weakness occasionally progressing to unconsciousness. Laboratory studies showed marked hypoglycemia, which was corrected by ingestion of glucose, but continued to recur every few days. Physical examination revealed no abdominal masses, and electroencephalography revealed no abnormalities in cortical discharge. What was causing the hypoglycemia? Remembering the dictum that every case of carcinoma of the body or tail of the pancreas is diagnosed as a psychoneurosis, we decided that pancreatic tumor was a justifiable preoperative diagnosis and scheduled a laparotomy. At surgery inspection and palpation showed the pancreas to be entirely normal and all other abdominal organs were apparently normal.

The question of the cause of the periodic hypoglycemia remained unanswered. Could some imbalance of the autonomic nervous system be responsible? No definite evidence was found to support such an idea. That functional hyperinsulinism does occur we were well aware, but a great many patients labeled as having "functional hyperinsulinism" are in reality suffering from anxiety neuroses. These thoughts played hide and seek through my mind as the patient recovered from surgery. Although no evidence of anxiety was found except that directly resulting from his periods of fatigue, exhaustion, and unconsciousness, neither could there be found any physical or organic cause for the low blood sugar, and it was concluded that it must be due to some functional disturbance. A year later it was reported through relatives that the patient had been operated on again in a distant city and a small mass (the size of a pea) was removed from the tail of the pancreas.

I have presented the reviews of these two cases because they illustrate two sources of diagnostic error which often result from the unidirectional or "organic" approach to diagnosis. The first illustrates the common "either-or" attitude: the patient has either a physical cause for his complaint, or else he is psycho-

(Continued on page 251)

THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

Published monthly by the American Osteopathic Association

**Publication Office, 100 S. Kenilworth Ave., Oak Park, Ill.
Editorial Office, 212 E. Ohio St., Chicago 11, Ill.
Address all communications to the Chicago Office**

KATHERINE BECKER, A.B.....Acting Editor
R. C. McCAUGHAN, D.O.....Executive Secretary
CLAYTON N. CLARK, D.O.....Business Manager

EXECUTIVE COMMITTEE

PRESIDENT.....STEPHEN M. PUGH, D.O., Everett, Wash.
PRESIDENT-ELECT.....H. DALE PEARSON, D.O., Erie, Pa.
PAST PRESIDENT.....ROBERT B. THOMAS, D. O. Huntington, W. Va.
FIRST VICE PRESIDENT.....FOREST J. GRUNIGEN, D.O., Los Angeles
CHAIRMAN PROFESSIONAL AFFAIRS.....BENJAMIN F. ADAMS, D.O., West Hartford, Conn.
CHAIRMAN PUBLIC AFFAIRS.....VINCENT P. CARROLL, D.O., Laguna Beach, Calif.

Subscription . . . . . Ten dollars a year in advance

Vol. 48 January, 1949 No. 5

MIDYEAR MEETING OF BOARD OF TRUSTEES

The Board of Trustees of the American Osteopathic Association held a 5-day session in Chicago, at the Drake Hotel, beginning December 13. The highlight of the meeting was the half day devoted to the dedication of the Central office building, and the reception and open house which followed the formal dedication. Mrs. Blanche Still Laughlin unveiled the plaque dedicating the building to Andrew Taylor Still. Addresses were made by Mr. George B. McKibbin of Chicago and Dr. Phil R. Russell, Past President of the Association.

The sessions of the mid-year meeting of the Board of Trustees were the longest on record, and literally hundreds of decisions as to action and direction of the Association were arrived at by the Board. Only a few of those actions are mentioned in the following catalog.

The Board postponed the Divisional Society Conference, sponsored by the Bureau of Public Education on Health, to the dates of February 5 and 6, the meetings to be held in the Knickerbocker Hotel in Chicago. The organization meeting of the Council on Education of the American Osteopathic Association was placed in the same hotel, on the dates of February 3 and 4. Because of conflicts in availability of hotels in Chicago, the Board changed the date of the 1950 convention to the week beginning Sunday, July 9, and directed that it be held in the Stevens Hotel.

The Board approved an added grant to the Des Moines Still College of Osteopathy and Surgery for research. Drs. R. M. Tilley, Edwin F. Peters, and R. C. McCaughan were nominated as official delegates to the American Council on Education, and Mr. Lawrence Mills was selected as alternate. The names of Dr. Alexander Levitt and Dr. George Northup were added to the Committee on Accreditation of Postgraduate Education. Dr. E. H. McKenna was appointed to the Committee on Membership Approval.

The Board surveyed at length the work of the Osteopathic Progress Fund Committee and its staff, reviewed the needs of the colleges in the light of present-day economics, and directed that the Osteopathic Progress Fund effort be carried on with renewed zeal, inasmuch as the results so far have been highly supportive of the profession's teaching institutions. It was recognized that the need continues to grow, and that the responsibility of the members of the profession can not, and will not, be elided.

The Board considered the long list of important recommendations from the Advisory Board for Osteopathic Specialists, and results of that consideration will be published elsewhere. Affiliate status was granted to the American College of Osteopathic Obstetricians and Gynecologists, and probationary approval was given to the American Osteopathic Society of Dermatology.

The Bureau of Hospitals offered, in cooperation with the representatives of the American College of Osteopathic Surgeons, material amendments to the previously adopted standards for hospitals for the training of interns, and to the standards for registered hospitals, and adopted new standards for hospitals providing residencies. Such standards had been previously adopted provisionally only.

The Board appropriated a sum of money for the use of the Auxiliary to the Association in connection with its program for the forthcoming annual convention of the Auxilary, in St. Louis.

The Board adopted a new form of contract between hospitals and interns or residents to be utilized by hospitals approved for the training of interns and residents. One hospital was added to the approved list for the training of interns, and ten residencies in various hospitals were approved.

The Board directed that a Foundation Committee be set up to consult with the Association's Finance Committee, the legal department, and others with respect to a consolidation of all philanthropic funds directed to the promotion of osteopathy, and the support of its colleges, hospitals, clinics, etc., and asked the Committee to complete its studies and report recommendations at the convention in July, 1949.

The Board directed that a copy of the minimum standards for osteopathic colleges be mailed to every D.O. of known address.

It was decided to denominate the 1950 directory of the Association, which presumably will come out immediately after the first of January of 1950, as the Still Memorial edition, the directory to carry information about the Association and its home, and a list of donors to the Still Memorial Building.

The meeting of the Board had been preceded by meetings of various official bodies of the Association, including the Bureau of Professional Education and Colleges, the Advisory Board for Osteopathic Specialists, the Bureau of Public Education on Health, and the Executive Committee. All met in Chicago, most of them in the new Central office quarters which proved quite adaptable.

The minutes of the Board meeting are being edited for proper distribution, and extracted so that the necessary information can be promulgated to those interested.

R. C. McCAUGHAN, D.O.

HEALTH INSURANCE

The subject of the economics of the distribution of medical care in the United States comes again to the forefront in the thinking of physicians. Indeed, consideration and study of the problem has not been far from the surface in the thinking of leaders in the profession since the arguments incident to the enactment of the Social Security Law in the middle thirties. At that time it was generally believed that health insurance was one of the triad of benefits sought by the proponents of Social Security legislation, along with job insurance and pensions for the aged.

With the new election over and Congress convening, we are reliably assured that Congress will again consider seriously a plan of tax-supported health insurance under the general control of the Federal Government.

The osteopathic profession, through its representative bodies, some time ago arrived at the consensus of the profession with regard to proposals to modify the economics of the provision of medical care to the people of the country. The House of Delegates of the Association has repeatedly considered the needs of the people for health services not now equally available to all the people. At the risk of oversimplification in the consideration of a very complex problem, the position of the profession is as follows.

It is recognized that certain income groups of the American public are unable to obtain the health care essential to maintain themselves in good health. Many could not afford to pay for such care even if the facilities and personnel to render the service were in existence. A healthy people is a happy and economically stable people.

The Association, representative of the profession, therefore favors the principle of compulsory prepaid medical care set up under the auspices of the national government so as to insure adequate medical service for all income groups and to provide safeguards to the system as hereafter outlined. As a method to accomplishing these ends, the Association favors a single national, prepayment, health insurance system. It is planned to cooperate with all groups interested to determine the extent of the need for increase in the supply of physicians, and of hospital and other facilities.

Conditioning the approval of legislation proposed to set up such a comprehensive plan, are the following:

1. To spread the risk and protect the public, plans should be formulated on a larger basis than that of a single county; a state or national basis is preferable.

2. Plans should provide separate and distinct contracts for hospital service and for physicians' reimbursement.

3. Plans should be approved for social need and administration by welfare departments, for actuarial data and financial administration by insurance departments and for medical regulations and administration by each participating profession.

4. Patient should have a "free choice" of his own doctor (subject to acceptance of such case by the doctor) and of his own hospital (if there is available space).

5. Panels of participating physicians must be open to all legalized schools of practice without discrimination.

6. Fee schedules must be paid in cash direct to doctor and hospital on a fee-for-service basis acceptable to participating professions and hospitals.

7. Advisory boards (and administrative boards if possible) should have divided representation from patients (subscribers), participating professions (the doctors), and taxpayers (the public).

8. All participating professions should be represented on boards that have the power of determining limits of practice and rating classification for both general and specialty practice.

9. Grievance boards from each profession should determine such charges as ethics-violation, case lifting, excessive treatment, and "exceeding qualifications."

10. Reimbursement policies of compulsory plans should be limited to a $2,500 maximum family income.

R. C. McCaughan, D.O.

THE KANSAS CASE

During 1947 four osteopathic physicians in Kansas filed a suit in a specially constituted Federal Court to enjoin the Governor and the Attorney General of the state from enforcing certain provisions of the Kansas law which had been interpreted to prevent osteopathic doctors from using drugs as remedial aid or performing surgery with instruments. Early in 1948 testimony was taken and recently the three judge court denied the plea for an injunction.

The plaintiffs alleged that the "due process" and "equal protection" clauses of the Federal Constitution should prevent the enforcement of the Kansas regulations governing practice, which, under interpretation of the Kansas courts, have deprived the complaining physicians of the full employment of their federally guaranteed rights in providing for the needs of their patients.

The court said, in effect, that it is within the province of a state to regulate those who care for the health needs of the people and that in this instance the state had not acted in an arbitrary manner.

The court admitted that in other states, acting under the state authority, osteopathic physicians, trained exactly like those practicing in Kansas, were licensed to practice surgery and to use medicinal preparations.

Defense in the case was obviously delegated to the representatives of the Kansas Medical Society and the State Board of Medical Examination and Registration. In the long history of persecution of the osteopathic profession by old-school medicine there has been no equal to the malevolence exhibited by the Kansas Medical Society. The present case was no exception.

The trial illustrates the difficulties faced by a court reviewing conflicting evidence from representatives of a profession testifying in a field with which

they work daily and in which the judges have had no professional training. It is hard, indeed it is impossible, for those familiar with and trained in osteopathic schools covering the whole period of time which was important in this case, to understand how a court could have arrived at some of the opinions set forth in its brief dicta.

The court apparently reached its conclusions solely on the basis of the constitutional and statutory law involved. The opinion was avowedly made without regard to what constituted osteopathy when the Kansas law was passed even though, in this connection, the court said, "For the purpose of this opinion, I will, therefore, assume that the use of drugs and surgery was a part of the original osteopathic concept and that reputable osteopathic schools teach surgery and the use of drugs to the same extent that the subjects are taught in accredited medical schools." With this assumption of the court one of the judges was not in agreement although his conclusions were that the injunction should be denied.

The court was apparently impressed with the possibility that under Kansas law there was opportunity for an osteopathic college to be approved as a medical school by the Board of Medical Examination and that therefore there was opportunity for osteopathic physicians and surgeons to qualify to practice in accordance with their training and education. Of course, those acquainted with methods of the Kansas Medical Society know that, at this time, such a possibility is nonexistent in that state.

One of the judges opined that, under Kansas law, a physician licensed to practice medicine and surgery cannot, legally, practice what the Kansas Supreme Court has defined as osteopathy.

OSTEOPATHIC WRITING

The need for more and better writing by osteopathic physicians is recognized by every thinking member of the profession. The Academy of Applied Osteopathy not only recognizes this need but is doing something constructive about it. They are offering incentive to junior and senior students in the osteopathic colleges; they are conducting prize essay contests with substantial rewards to the winners.

The winners in last year's contest were Miss Viola Frymann who is now a senior at the College of Osteopathic Physicians and Surgeons and Mr. Robert C. Schaefer who is a senior at Kirksville College of Osteopathy and Surgery this year. Miss Frymann's paper, "The Role of the Osteopathic Lesion in the Production of Cardiac Pathology," and Mr. Schaefer's paper, "Role of the Osteopathic Lesion in Diseases of the Liver," appear as Special Articles in this issue of THE JOURNAL; they begin on page 246. These papers should be given thoughtful attention by readers and constructive criticism and encouragement should be offered to the student authors.

While it is understood that formal education is not necessarily a prerequisite to good writing, it is usually conceded that a good general educational background is extremely useful and desirable for a physician, particularly when he engages in writing. The subject of the educational background of the physician is discussed by three different writers in this month's JOURNAL.

Mr. Lawrence Mills, writing in the Educational Supplement, says, "The Bureau of Professional Education and Colleges of the American Osteopathic Association recommends that preosteopathic students complete 3 years of work. Such students are urged to emphasize general education rather than to concentrate on a science major. Osteopathic colleges have as their first objective the training of the general family physician who will be a professional man and not a technician. A good cultural background in the preprofessional colleges is considered important in a doctor's training."

Dr. Otterbein Dressler in his article, "Osteopathic Education Looks Ahead," writes, "No one is more able to provide the early education for our doctors than the teachers in the colleges of liberal arts and science. Therefore we must cause these teachers to see that we want liberal, broad education, rather than narrow, cold science. We seek people with knowledge, but knowledge tempered with understanding."

In "Educational Indigestion," an article reprinted from *Federation Bulletin*, R. N. Whitfield, M.D., points out the lack of proper education below the preprofessional level. On the other hand he emphasizes the need for such education.

Mr. Mills shows in his statistics on osteopathic students that 57 per cent of matriculants in the fall of 1948 and 66 per cent of those entering college in the fall of 1947 and in February, 1948, have 3 years or more of preprofessional college training in good colleges or universities. With such backgrounds, present-day osteopathic students are excellently prepared to become the profession's writers of the future. There is no better time for them to start writing than when they have available to them for help and guidance the libraries, the librarians, and the faculty members of their colleges. Few will disagree with the statement that practice and "know how" are important factors in effective writing.

The contest conducted by the Academy of Applied Osteopathy should be a starting point for the development of latent writing abilities of osteopathic students. Details of the 1949 contest are given on page 251 of this JOURNAL.

The Academy is encouraging osteopathic writing in another field; the paper of Dr. Angus G. Cathie which begins on page 235 was provided under the Harry L. Chiles Memorial Fund.

THE EDUCATIONAL NUMBER

This JOURNAL is the Educational Number; it contains a Supplement on Osteopathic Education contributed by The Office of Vocational Guidance of the American Osteopathic Association. While much material on osteopathic education has been included in THE JOURNAL through the years, this is the first time a full Supplement has been devoted to the subject. Outstanding among the contents is the complete text of "Educational Standards for Osteopathic Colleges" which should be studied by every osteopathic physician.

Andrew Taylor Still Memorial Building Dedicated

December 15, 1948

The Andrew Taylor Still Memorial Building, the permanent Home of the American Osteopathic Association, was dedicated on December 15, 1948. The dedicatory ceremonies which were held in a temporary auditorium arranged on the third floor were opened at 2:30 p.m. by Dr. Allan A. Eggleston, Montreal, Canada, trustee and chairman of the Committee on Dedication. The Reverend Charles Ray Goff, pastor of the Chicago Temple First Methodist Church, gave the invocation. Dr. Stephen M. Pugh, President, presided at the ceremonies. The speakers were Mr. George B. McKibbin, Chicago attorney, who served as administrator of internal affairs under the American Military Government in Germany and who is now chairman of the Illinois Board of Public Welfare, and Dr. Phil R. Russell, Fort Worth, Texas, Past President, trustee and chairman of the Committee on Central Office Home.

Mr. McKibbin, whose topic was "A Layman Views Osteopathy," said, "During the past 50 years the osteopathic profession has had to combat the handicaps of newness and prejudice, and that it has succeessfully overcome those handicaps and made such great strides in demonstrating its permanence and usefulness in helping to mend sick bodies and produce a healthier citizenry is greatly to its credit. This building which we are dedicating today stands as a useful monument in which to carry out many of the organizational activities of your great profession."

Dr. Russell, representing the more than three thousand people whose generosity made the building possible, spoke on "Andrew Taylor Still—Physician, Philosopher, Humanitarian." He said, "This is a dedication ceremony of a memorial to Andrew Taylor Still, and would be a complete failure unless we devote the major portion of this talk to the man to whom we dedicate this memorial, and to the theories he gave to the world."

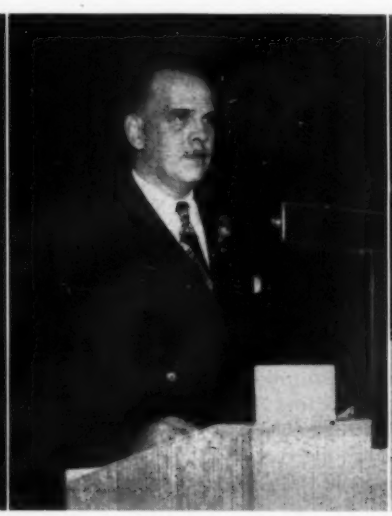
In presenting the building he said, "Those who conceived, financed, and built this beautiful building and memorial could find no better trustee for it than the American Osteopathic Association, whose chartered objectives are to carry out the principles and concept of health as established by the founder of osteopathy." Dr. Russell turned over to Dr. Pugh the deed and the keys to the building. The keys were given into the care of Dr. R. C. McCaughan, Executive Secretary, by Dr. Pugh.

The closing events of the ceremony were the presentation of a golden building key to Dr. Russell by Dr. Robert B. Thomas, Huntington, W. Va., Past President; the unveiling of the dedicatory plaque of Dr. Still by his daughter, Mrs. Blanche Still Laughlin; and the reading by Dr. Eggleston of the names of those who sent flowers and congratulatory messages and telegrams. The benediction was pronounced by Dr. Goff.

Following the Dedication, open house was held from 3:30 to 6:30. The entire Official Family was

Mr. George B. McKibbin

Dr. Allan A. Eggleston



Dr. Phil R. Russell

Left: Dr. Robert B. Thomas, Past President, presenting golden key to building to Dr. Phil R. Russell, chairman of the Committee on Central Office Home, in the presence of Dr. Stephen M. Pugh, President. Right: Dr. Pugh turning over to Dr. R. C. McCaughan, Executive Secretary, keys to the building.

present and with the Central office staff acted as hosts to more than eight hundred visitors. Among the visitors were friends of osteopathy, business associates, representatives of other organizations and associations, former employees, families of staff members, and many members of the profession and their families from Chicago and the vicinity and from the neighboring states of Wisconsin, Iowa, Missouri, Indiana, and Michigan. Some visitors came much greater distances.

The great beauty of the building as well as its functional design were the subject of much favorable comment. Members of Central office staff acted as guides and showed visitors through the various departments, explaining the special features of design and equipment.

The display stand dedicated to the memory of the late Dr. Ray G. Hulburt was of great interest to many of those present. The movable leaves of the stand are filled with historical material dealing with all phases of osteopathy. It was the often stated wish of Dr. Hulburt that such a display should have a place in the permanent home of the Association.

The dedication of the Andrew Taylor Still Memorial Building culminates 4 years of effort and planning under the leadership of Dr. Russell as chairman of the Committee on Central Office Home. Dr. C. Robert Starks, Past President of Denver, and Dr. Frank MacCracken, Fresno, California, as successive chairmen of the Subcommittee on Fund Raising made notable contributions to the effort.

Ground breaking ceremonies took place during the Fifty-first Annual Convention of the Association in Chicago, July, 1947. Actual construction began soon after and the building was ready for occupancy August 28, 1948.

Left: Mrs. Blanche Still Laughlin before memorial plaque of her father. Right: Mrs. Ray G. Hulburt and Dr. H. Dale Pearson, President-Elect, viewing display stand dedicated to the memory of the late Dr. Ray G. Hulburt.

SPECIAL ARTICLES

The Role of the Osteopathic Lesion in the Production of Cardiac Pathology

VIOLA M. FRYMANN, M.B., B.S. (Lond.)*
Los Angeles

"The osteopath of practice and skill knows and has demonstrated to his own satisfaction that when he adjusts the spine and ribs the heart acts normally. To him this is not theory, but truth of his own demonstration."

—A. T. Still.[1]

The therapeutic test has been the criterion by which a great many methods have progressed from hazy ideas to trusted instruments of healing. But in this scientific age it is not sufficient to state that a certain procedure produces a beneficial result. There must be an explanation of the route and forces by which this result is accomplished; a manipulative measure must be based upon anatomical and physiological facts. In order to define the role of the osteopathic lesion in the production of pathology, careful analysis must be made of (1) the nature of the osteopathic lesion itself, (2) the anatomical and physiological circumstances which permit this lesion to induce distant pathology, and (3) the nature of the pathology which can with a considerable degree of certainty be attributed to a particular lesion.

The A. T. Still Research Institute engaged in work on these three important problems, and reference will be made to the extensive results accumulated thereby.

THE OSTEOPATHIC LESION

Concisely stated, an osteopathic lesion is "a maladjustment that perverts physiology."[2] Louisa Burns uses the term "vertebral lesion" in the sense of a slight maladjustment of vertebrae, unassociated with any actual solution of continuity of any structural tissues.[3] As a result of extensive, thoroughly controlled observations upon several thousand human beings, and but slightly fewer animals, she was enabled to make a very important statement, namely, that cells in the vicinity of lesioned vertebrae undergo certain changes which are uniform in type no matter what the etiology of the lesion, or whether it is primary, secondary, accidental, or experimental. Differences in duration of the lesion cause differences in the degree of these pathological changes, but not in their kind. There is therefore a definite pathological picture of the osteopathic lesion, which is as clearly defined as the changes which are called to mind by the term inflammation.

A brief review of these positive changes will not only clarify the term "osteopathic lesion," but will also assist in an understanding of the visceral changes to be described later. Changes in the bone marrow are reflected early in the circulating blood picture. The periosteum and ligaments show slight swelling which is most marked at points of attachment of ligaments and muscles; staining reactions demonstrate reduced alkalinity. Later, partial absorption of fluid and hyperplasia of connective tissue are noted. The intervertebral disk shows marked swelling of the nucleus pulposus which is under increased tension. Alkalinity is reduced. Absorption of the edematous fluid, atrophy of the cells, reduction of elasticity, and connective tissue hyperplasia are features of the disk in the later phase of the lesion.

Swelling and thickening are also characteristic of the synovial membrane in the lesioned articulation; small petechial hemorrhages by diapedesis appear and, recurring at irregular intervals, give the synovial fluid, itself increased in volume, a blood-stained appearance. These hemorrhages recur as long as the lesion remains, thus perpetuating the abnormality of the fluid. In the first few hours after lesioning, the fibers of the small spinal muscles show a normal contraction; this is gradually superseded by increasing tension which passes into a state of rigor which closely resembles rigor mortis. Histologically the muscle protoplasm is firmer than normal, the longitudinal striae are more distinct than usual, while cross striations are less easily visible.[4] The muscle fibers are swollen with increasing edema and diminished alkalinity. Gradually there is increase in the number of the nuclei of muscle and connective tissue cells and an atrophy of many muscle fibers. Hemorrhages by diapedesis occur at irregular intervals, to be later digested, absorbed, and replaced by fibrous tissue. The fasciae, both deep and superficial, and subcutaneous tissues are the site of many hemorrhages by diapedesis in areas related to the lesion. A diminished alkalinity of the tissue juices is a constant feature.

Changes in the nerves related to the lesioned area include (1) a slightly granular or hyaline appearance of the medullary sheath, (2) slight swelling of the nerve fiber, (3) the nerve cells show less sharply convex curves, Nissl's bodies are scanty, and stain freely, while the nucleus stains feebly and is eccentrically placed.[5] Nerve function moreover, is very sensitive to changes in pH, which in turn is influenced by the carbon dioxide and oxygen tension. In the presence of edema the circulation is impaired, the gaseous exchange is reduced and the pH falls. Those nerve fibers with no medullary sheaths, namely the sympathetics to viscera and blood vessels, are most susceptible to these changes; those with thinnest sheaths which supply the small spinal muscles are affected next, whereas the largest fibers with thickest sheaths are only affected after a long time. Furthermore, viscera innervated by the splanchnic nerves and others derived from visceral centers in the spinal cord which pass as white myelinated preganglionic fibers to collateral ganglia before forming synapses with sympathetic cells are less seriously affected than are those which synapse in the ganglia of the sympathetic chain and are relayed as nonmyelinated gray rami to the viscus. This explains the susceptibility of the cardiovascular system to lesions of the vertebral complex.

*Awarded first prize for a paper on this subject submitted by a junior or senior osteopathic student in the 1948 contest of the Academy of Applied Osteopathy. This year Miss Frymann is a senior at the College of Osteopathic Physicians and Surgeons, Los Angeles.

Thus Dr. Burns concludes that "there is a definite and invariable series of tissue changes due to vertebral lesions";[3] it is this complex of tissue changes, briefly described above that constitutes the osteopathic lesion.

Consideration must now be given to the pathways by which the heart may be affected by such osteopathic lesions.

THE AUTONOMIC NERVOUS SYSTEM AND THE HEART[6]

The heart receives innervation through the sympathetic and parasympathetic nervous systems. The sympathetic supply is derived from the superior, middle, and inferior cardiac nerves arising from the cervical sympathetic ganglia. Also sympathetic nerves arising from the second to the sixth thoracic ganglia have been traced to the cardiac plexuses either by branches to the cardiac nerves, to the vagus or direct. These sympathetics to the heart appear to be more abundant in the fourth and fifth segments than elsewhere. The efferent components of the sympathetic cardiac nerves are postganglionic fibers arising from cells situated in the segmental ganglia from which the nerves arise. The corresponding preganglionic fibers are components of the corresponding thoracic spinal nerves down to and including the fifth.

The parasympathetic innervation is derived from the vagus through the superior, inferior, and thoracic cardiac rami on either side. The efferent branches of the vagus are preganglionic unmyelinated (70-80 per cent) fibers which synapse with ganglion cells in the cardiac plexus.

All the extrinsic nerves of the heart carry afferent fibers except the superior sympathetic cardiac nerves.

The intrinsic innervation of the heart is still incompletely investigated, but the general conclusion is as follows. Numerous ganglia have been found on the posterior surface of the atria and at the roots of the great vessels, but ganglia cells occur only rarely, if at all, in the ventricular walls. These intrinsic ganglia are associated with an abundant subepicardial plexus of unmyelinated fibers which is present in all parts of the heart. This plexus is most abundant in the areas of distribution of the ganglia and in the interatrial septa. Fiber bundles arise from it and ramify throughout the myocardium around the cells. Extensive experiments suggest that the atria and atrioventricular bundle are supplied by sympathetic and parasympathetic fibers, but that the ventricular muscle receives only sympathetic innervation. As the fibers approach their termination in the cardiac muscle, whether in atria or ventricles, they form delicate plexuses around the muscle fibers.

The physiology of cardiac innervation will be briefly reviewed. The primary effect of vagal stimulation is inhibitory, but under pathological conditions cardiac acceleration may be produced by stimulation of the right vagus.

The sympathetic fibers are the accelerators. Greater acceleration results from stimulation of the nerves of the right side than of the left. Stimulation of the right cardiac nerves influences atrial contraction, having little effect on the ventricles, whereas stimulation of the left nerves exerts little influence on the atria, but augments ventricular contraction. Of great importance to the osteopathic physician is the fact that in man stimulation of the superior and middle cervical sympathetics fails to accelerate the heart whereas stimulation of the roots or communicating rami of the upper thoracic nerves, particularly those of the second and third, or the postganglionic fibers running from the stellate and upper fourth and fifth thoracic ganglia to the heart *always* results in the cardiac acceleration. Also sympathetic stimulation modifies the conductivity and contractility of the cardiac musculature. One more characteristic of importance in a consideration of complex lesion states is that sympathetic stimulation has a longer latent period before its effect appears than has vagal stimulation; also the effect is more prolonged after cessation of stimulation. Therefore, when vagal and sympathetic stimulation are simultaneous, the vagal effect appears first, giving place to the sympathetic effect as fatigue develops.

With this brief review of the anatomy and physiology and the nature of the disturbing pathology of the lesion accomplished, a detailed consideration of the changes noted in cardiac structure in association with spinal osteopathic articular lesions will now be undertaken, bearing in mind a very apt and enlightening statement by Becker:[7] ". . . local pathology in the segments of the spinal column impairs the functioning capacity of nerves in that region, and as a result of that local pathology, the tissues that receive their innervation from these nerves are disturbed in their functioning capacity and tend to develop a pathology *exactly the same in kind* . . . as is present in the local lesion." (Italics supplied.)

CARDIAC PATHOLOGY RELATED TO SPECIFIC OSTEOPATHIC LESIONS

During the last 15 years carefully controlled experiments with large numbers of rabbits and other laboratory animals have provided reliable information regarding the effects of specific spinal osteopathic articular lesions upon the structure and function of the heart. Information derived from human beings on a more limited scale has corroborated most of the conclusions reached by these experiments. It is principally by the work of Burns that this valuable information has been disclosed.[8,9,10,11] The effects of specific lesions upon the cardiac apparatus will now be described, proceeding from above downwards.

The Occipital Lesion.—Immediately after production of the lesion, pulse changes are observed: first tachycardia and irregularity which soon give place to a grouping of about half as many slow beats as rapid ones, e.g., ten slow beats to twenty rapid ones. Extrasystoles may also be noted.

The Atlas Lesion.—Pulse changes similar to those following the occipital lesion are noted immediately after production of atlas lesions. The force is stronger but the rhythm is irregular. There may be bradycardia but the grouping of fast and slow beats is invariable.

Electrocardiograms confirm this functional pathology. The P wave is frequently of abnormal form and duration indicating that the contraction originated at an abnormal focus, i.e., one other than the sinoauricular node. Fibrillation has been noted. Conduction time as shown by the QRS complex is much prolonged; slurring of this complex indicates pathological changes in the bundle of His and that the impulse has not followed the normal path of distribution to the ventricular muscle.[12]

Before describing the structural pathological changes it may be of value to review briefly the gross and histological features of the normal rabbit's heart. From a study of 210 normal rabbits[13] the following conditions could be standardized.

A. Gross: After removal, the normal tone of the myocardium maintains the firm rounded contour of the

heart when placed on a flat surface. The valvular structure is normal. The myocardium bleeds slightly on section, but can only be torn by considerable force, forming palpably strong fragments of good tone. The extravasated blood is not granular.

B. Microscopic: The cross striations are even and regular. The longitudinal striae are rarely visible, and very indistinct when visible at all. The connective tissue fibers are fine, delicate, scanty. The nuclei of muscle cells are placed midway between the ends of the cells, and the striations of the cell are not distinct near the nucleus. The arterioles contain a central core of cells surrounded by a peripheral zone of plasma. The capillaries contain plasma and very few blood cells—approximately one erythrocyte in a capillary area long enough to contain 10-15 cells placed in a line. No hemorrhagic areas are visible. The differences between Purkinje cells and ordinary muscle cells are shown chiefly by variations in refrangibility.

In the upper cervical or atlas lesions the immediate structural changes are rare, irregular cross striations and early cloudy swelling in the cells of many areas. Later the Purkinje cells and cells of intrinsic cardiac ganglia show a dull and rather cloudy appearance, while the nerve endings are fragmented. Thus the conduction apparatus of the heart is predominantly affected, and this is confirmed clinically and electrocardiographically in the presence of an occipital or atlas lesion. (It is unusual in man, to find one without the other.) The tissue changes surrounding the atlanto-occipital and atlanto-axial articulations when in lesion cause functional changes in the vagus nerve thus diminishing its activity, or disturbing the rhythm of its action. Other cervical lesions do not have such a profound influence upon the heart.

The upper six or seven thoracic vertebrae when in lesion may all affect the heart to some extent, but it is the third and fourth which produce the most outstanding variations in function and structure. With a fourth thoracic lesion there is a feeble staccato pulse, the rate and force is uneven, slower than normal with a peculiar palpable tremulous quality. Electrocardiographic changes in the ST limb, the irregularity and peculiarities of the T wave are indicative of myocarditis or cardiac malnutrition.

Since time changes only the degree and not the inherent nature of lesion pathology, changes recorded within 3 weeks of lesioning will be described. Within an hour of lesioning the changes are apparent. Months or years later a more chronic type of pathology is found but on all occasions the fundamental pathology is the same.

A. Gross: The heart lies flat, after removal. The myocardium bleeds freely, and is easily torn into soft, flabby, granular fragments. The blood is granular.

B. Microscopic: The cross striations are irregular and dim. The longitudinal striations are very distinct in all areas. The connective tissue fibers are fine, delicate, and scanty, but in the later specimens have become abundant, coarse, and irregular. The nuclei of the muscle cells occasionally are found at the pole of the cell. The arterioles are crowded with cells and there is no peripheral plasma layer visible anywhere within 3 days of lesioning. The capillaries are crowded with cells, and diapedesis is beginning to occur. A few definite hemorrhages may be observed without degenerative changes. The hemorrhages increase in number later. They are always small, but the erythrocytes are degenerating and there is connective tissue overgrowth. The Purkinje system is apparently unchanged. Increased tissue fluid separates the muscle fibers and distends the cardiac cells.

Not merely is this a picture of weak cardiac musculature, myocarditis, but it presents a close similarity to the local tissue changes of the osteopathic lesion, and it is the universal picture of changes initiated by the lesion irrespective of the viscus considered.

Speculation upon the influence of thoracic or upper cervical lesions on rheumatic, diphtheritic, and toxic myocarditis, myocardial fibrosis, and heart block is interesting. The local or diffuse type of lesion in rheumatic myocarditis,[14] the inflammatory edema, the cellular necrosis, the fibrosis, and the ultimate scarring must surely be perpetuated and aggravated by the osteopathic lesions described. In diphtheritic myocarditis the muscle fibers are swollen, granular, and have lost their striations. These changes very closely resemble the changes produced by thoracic lesions. Therefore, it is possible to state that osteopathic lesions may be important contributing factors in the cardiac complications of many general diseases.

Specific cardiac pathology has not been demonstrated following lesions lower in the spine, but a general emaciation and loss of tone has been recorded due to the malnutrition which accompanies low thoracic and lumbar lesions.

A few words may be added concerning congenital cardiac abnormalities. Burns[15] came to the conclusion that "Rabbits . . . with ancestry known to be normal for three or more generations did not produce . . . deformed or weakly young. . . . Any lesion . . . exerted some effect upon progeny."

The conclusion to be drawn from this survey of the osteopathic lesion in its relation to cardiac pathology, has been very ably expressed in the following words of Dr. Becker.[7] ". . . *there is nothing in cardiac therapy superior to scientifically prescribed, accurately dosed, carefully administered and repeated osteopathic manipulative treatment for the relief of cardiovascular disease either functional or organic.*"

1927 Griffin Ave.

REFERENCES

1. Still, A. T.: Osteopathy: Research and Practice. Published by author, Kirksville, Mo., 1910, p. 154.
2. Beckwith, C. G.: Vertebral joint lesion; etiology and diagnosis. J. Am. Osteop. A. 43:263-270, Feb. 1944.
3. Burns, L.: Effects of vertebral lesions on cell structure. J. Am. Osteop. A. 26:97-101, Oct. 1926.
4. Burns, L.: Bony lesions and soft tissues. J. Am. Osteop. A. 37:581-583, Aug. 1938.
5. Burns, L.: Osteopathic lesion. Part. V. Nerves in lesioned areas. J. Am. Osteop. A. 18:201, Dec. 1918.
6. Kuntz, A.: Autonomic nervous system. Ed. 3. Lea & Febiger, Philadelphia, 1945, pp. 138-156.
7. Becker, A. D.: Manipulative osteopathy in cardiac therapy. J. Am. Osteop. A. 38:317-319, March 1939.
8. Burns, L.: Cardiac changes following certain vertebral lesions. J. Am. Osteop. A. 41:131-138, Nov. 1941.
9. Burns, L.: Preliminary report of cardiac changes following correction of third thoracic lesions. J. Am. Osteop. A. 42:3-8, Sept. 1942.
10. Burns, L., and Whiting, L.: Further reports of cardiac changes following correction of third thoracic lesions. J. Am. Osteop. A. 43:122-125, Oct. 1943.
11. Burns, L.: Certain supravital microscopic studies of the heart. J. Am. Osteop. A. 45:113-114, Nov. 1945.
12. Whiting, L. D.: Report on changes in electrocardiogram in lesioned rabbits and patients. J. Am. Osteop. A. 42:213-216, Jan. 1943.
13. Burns, L.: Review of cardiac pathology in certain laboratory animals. J. Am. Osteop. A. 45:115-116, Nov. 1945.
14. Boyd, W.: Textbook of pathology. Ed. 5. Lea & Febiger, Philadelphia, 1947, pp. 353-371.
15. Burns, L.: Cardiac abnormalities in rabbits. J. Am. Osteop. A. 41:405-406, June 1942.

Role of the Osteopathic Lesion in Diseases of the Liver

ROBERT C. SCHAEFER*
Kirksville, Missouri

In an attempt to explain the relation of the osteopathic lesion to liver dysfunction I shall try to explain why one should expect physiological malfunction because of an anatomical discrepancy. I shall try to corroborate each positive statement with citations to well-known anatomical or physiological texts and, in addition, with references to the research that has been progressing in osteopathic colleges.

Most of the nerves of the liver are of the unmyelinated variety; they follow the portal canals and are distributed to the walls of the blood vessels and bile ducts and to the hepatic capsule. Naked fibrils from these trunks also enter the hepatic lobules and form a plexus among the cells, in relation with which they form fine terminal brushes and varicose end-knobs.[1] From this description of the nervous structure it may be assumed that the liver is highly innervated and subject to a very fine physiologic balance. This is known to be true.

To review briefly the circulation of the liver one must remember that the liver obtains its blood supply from two sources, the portal vein, which drains the digestive tract, and the hepatic artery. The portal vein differs from other veins in that it divides into numerous branches which ultimately form a rich capillary network within the liver substance. In this it resembles an artery, but unlike an artery it is interposed between two capillary beds, one, as just mentioned, in the liver, the other in the splanchnic area which it drains. The primary branches of the portal vein upon entering the liver divide into vessels which run between the hepatic lobules. These, the interlobular veins, give rise to capillary-like vessels called the hepatic sinusoids lying between the liver cords and separated each from a bile capillary by a single layer of hepatic cells. The Kupffer cells are found within the sinusoids, attached by strands to their walls. The sinusoids converge toward the center of the lobule where they empty into a wider channel running perpendicularly to them, and called the central vein. The central veins of neighboring lobules join in groups to form sublobular veins which unite to form hepatic veins which in turn empty into the inferior vena cava.

The hepatic artery is distributed mainly to the fibrous tissue of the capsule and interlobular septa. Its terminal branches join the hepatic sinusoids. The blood conveyed to the liver by the hepatic artery constitutes about 25 per cent of the organ's total blood supply. Upon this fraction, however, the liver depends for its oxygen supply; the oxygen saturation of the portal blood is low and it probably gives up little oxygen in its passage through the liver.[2]

During this discussion it would be well to remember, at all times, the blood supply of the liver. The blood supply in the liver, as in all visceral organs, is dependent entirely upon the integrity of the autonomic nervous system. The liver, embryologically, is derived from the alimentary tract and consequently is similarly innervated.

The functions of the liver are many and these functions are dependent upon the function of the autonomic nervous system. The secretion of the bile varies according to the type of food ingested and is influenced by nerve activity and seems to be further influenced by certain products of internal secretion. These products of internal secretion, such as adrenalin, thyroxin, and pituitary extract, control the process of glycogenesis in the liver which is of great import in the plan of body economy. Further, these same substances exert a great control and influence upon the nervous system as a whole. And these substances, or hormones, in turn, are dependent for their adequate or normal secretion upon a normal nervous system.

The secretion of bile is influenced by nerve activity and seems to be further influenced by secretin, a hormone secreted by the duodenum, which is concerned primarily with pancreatic function. Ivy[3] has recently shown that purified extracts of the duodenal and jejunal mucosa, when injected intravenously, cause the gallbladder to contract and expel its contents. It has been proved that this substance is not secretin and he has suggested the name, cholecystokinin.

The parasympathetic supply to the liver is derived from the vagus nerve as is that of the entire gastrointestinal system. The vagus thus supplies activating fibers to the bile ducts and the gallbladder and inhibiting fibers to the sphincter of the papilla of Vater.

The sympathetic supply to the liver is derived from the celiac ganglion. It is connected with the cord by the greater and lesser splanchnic nerves; the greater splanchnic nerve arising from fifth, sixth, seventh, eighth, and ninth thoracic segments and the lesser arising from the ninth and tenth or tenth and eleventh thoracic segments. Sympathetic nonmedullated fibers from the celiac ganglion supply the stomach, liver, pancreas, spleen, kidney, adrenal, ovary, testicle, and the intestines as far as the descending colon.[4]

The celiac or solar plexus lies upon the abdominal aorta at the origin of the celiac artery. The celiac ganglia, right and left, lie embedded within the plexus, which is made up of fibers arising in the ganglia which are the postganglionic fibers of the greater and lesser splanchnic nerves together with preganglionic fibers of the vagus. "The plexus invests the celiac artery throughout its course and gives rise to several subordinate plexuses—the hepatic, gastric, splenic, renal and adrenal plexuses—which invest the corresponding arteries and their branches."[5]

Through its various activities the autonomic nervous system exercises the important function of maintaining the constancy of the fluid environment of the body cells; it serves to combat forces, acting either from within or without, which tend to cause variations in this environment. Of the glandular structures under autonomic influence, the liver, pancreas, and adrenals are of especial importance in the regulation of blood sugar. The pituitary gland in some of its functions, at least, is also under autonomic control. The thyroid and probably the parathyroids are governed in turn by hormones liberated by the pituitary, though it is not improbable that they may be influenced also by impulses received

*Awarded first prize for a paper on this subject submitted by a junior or senior osteopathic student in the 1948 contest of the Academy of Applied Osteopathy. This year Mr. Schaefer is a senior at Kirksville College of Osteopathy and Surgery, Kirksville, Mo.

through autonomic paths. The stability of the internal environment which is so characteristic of the healthy body is spoken of by Cannon[6] as homeostasis and, osteopathically speaking, we refer to homeostasis as the normal reaction of the organism to its internal and external environment.[6]

When the sympathetic system is activated the liver is stimulated and increased glycogenolysis is induced. This same effect may be initiated by the intravenous injection of adrenalin. The sympathetic system is activated and induces a response by the liberation of sympathin, an adrenalin-like substance, at its postganglionic termination.

Thus it is seen that a dysfunction in one organ may easily affect the normal physiological function of one or several of the similarly innervated organs through autonomic control. This interrelationship, in theory, should explain the gross involvement in organ systems after a prolonged period of disturbed function in one organ.

Best and Taylor[7] point out the fact that the abdominal and thoracic viscera are insensitive to several types of stimuli which readily arouse sensations in the skin and more superficial tissues of the body. They cite the results of investigations made on the effects of various stimuli by a number of observers, including Ross, Head, Mackenzie, Hurst, and Carlson.

Sensations of pain cannot be elicited from the viscera by the usual means. The liver or other organs may be pinched, burned, or cut without arousing any immediate sensation. The insensibility of the alimentary tract to ordinary forms of stimulation commences in the middle of the esophagus and extends as far as the beginning of the anal canal. The question arises as to how these observations be reconciled with the fact that pain is one of the commonest manifestations of visceral disease.

Several observations have been made in an attempt to explain the phenomenon of referred pain but the whole subject of pain arising in or referred from the viscera is still of a highly controversial nature. One theory that has been considered is that abdominal pain is always due to the stimulation of somatic nerve terminals in the parietal peritoneum or mesentery and that the organs themselves are quite devoid of pain fibers. According to this view, therefore, pain localized within the organ itself—true visceral pain—is an impossibility.

Ross advanced the theory that visceral pain was of two types: (1) referred pain and (2) true visceral or splanchnic pain, which was diffuse, poorly localized, and arose in the viscus itself.

Mackenzie supported Ross's view of referred pain but maintained that all visceral pain was of this nature, the viscera being insensitive to stimulation. He believed that true visceral pain was never experienced. Mackenzie's conception of referred pain is that when a viscus is diseased, pain or tenderness is frequently felt in the tissues overlying it approximately or in some part quite remote from it.

It will be remembered that a given spinal segment supplies autonomic nerve fibers to a visceral area and somatic nerves to a well-delineated area of the skin. The two types of structures thus linked through the cord may be some distance apart as the diaphragm and shoulder, or be more closely related as the abdominal wall and underlying abdominal viscera. It was Mackenzie's belief that afferent autonomic impulses set up an "irritable focus" with the result that cells which were accustomed to receiving impulses from the corresponding somatic area were excited. In this manner the impulses from the viscera "irradiated" to cells of the corresponding somatic center. New impulses originating in these cells travelled along the usual paths to higher perceptive centers (thalamus) which projected or referred the sensation to the somatic area from which it was accustomed to receive impulses. Thus he accounted for spontaneous pain in superficial structures remote from the diseased site. Mackenzie called these reactions viscerosensory reflexes. Tenderness to touch, pressure, or light pinching of the skin was ascribed to the impulses, which usually would be below the threshold for pain, arriving in the segment rendered hyperexcitable as a result of impulses received from the diseased organ. In the case of the abdominal viscera, Mackenzie held that the area of tenderness in the abdominal wall remained fixed, though the position of the diseased organ changed, thus indicating the referred nature of the pain.[7]

There are several other theories which differ in varying degrees from the work of Mackenzie but all agree, of course, on this one important point: the center from which the dysfunction arises is in the spinal cord or central nervous system.

If these theories are true, and in all probability they are, let us consider a passage from Boyd[8] with reference to cirrhosis of the liver. He states that ". . . there is no one cause of portal cirrhosis, that any agent leading to diffuse necrosis of hepatic cells can give rise to cirrhosis. The use of cinchophen in proprietary medicines can produce typical portal cirrhosis. In the great majority of cases no cause can be demonstrated."

According to Boyd it seems justifiable to divide portal cirrhosis into two main groups as regards pathogenesis. The first may be called the acute or subacute atrophy group and may be due to agents known to cause diffuse necrosis or it may belong to the idiopathic group of yellow atrophies. There may be repeated attacks of jaundice with epigastric pain, vomiting, and fever, which are designated by the clinician as hepatitis. Large groups of liver cells are destroyed at each attack. If the patient lives these areas are replaced by fibrous tissue and the remaining cells undergo compensatory nodular hyperplasia. If the outline of the necrotic lobules is still distinguishable, the case may be put in the acute atrophy or toxic group but it is usually difficult or impossible to make the distinction.

However, in the great majority of cases, cirrhosis results from a slow, long-continued necrosis, a nibbling away of cells and their replacement by fibrous tissue. The cause of this gradual destruction is uncertain as there is no history of attacks of any kind. Little doubt exists that a variety of toxins, bacterial, metabolic, or even exogenous, may be responsible. Whatever interferes with tissue respiration (oxidation) in the hepatic cells may give rise to neorosis and finally cirrhosis. Efficient carbohydrate metabolism cannot take place when there is anoxia and the cells become infiltrated with fat which replaces the normal glyogen. Marked fatty infiltration seems to be an antecedent of cirrhosis in many cases.

It is appropriate to refer to an osteopathic principle which states fundamentally that the osteopathic physician refers back to the primary cause of disease more carefully than physicians of other schools of medicine. Instead of merely classifying symptoms—the results of disease—and resting his diagnosis

thereon, the osteopathic physician insists upon searching tirelessly for adequate physical "lesions" that are to be found as the cause of symptoms.

Wilbur V. Cole[9] has noted gross changes, as well as marked histological changes in the liver, in his experimental work at the Kirksville College of Osteopathy and Surgery. He has, in his description of histological sections, often described cloudy degeneration of the livers of animals whose lesions were of short duration. This finding has been consistent in all lesioned animals. Those animals who have been lesioned in the thoracic area and then have been allowed to develop chronic symptoms have marked areas of fibrosis demonstrable in the liver as well as other organs.

Would it not be within the realm of reason or at least to hypothesize that those groups referred to as the "idiopathic group of yellow atrophies" might possibly be due to disturbed reflex areas in the central nervous system, the liver being specifically involved by lesions involving the eighth, ninth, and tenth thoracic areas.

CONCLUSIONS

Osteopathy is the therapeutic system which searches for the starting and "starving" point in physiological trouble—not wasting time unduly with the endless panorama of fleeting symptoms, but going directly to the center where the original cause is usually to be found as some form of mechanical interference with nutrition.

This has been a short resume of generalized organ pathological involvement with special emphasis placed upon the liver. I hope that in this thesis, I have established the probable correlation of lesion pathology to visceral dysfunction. In all probability, several of the toxic phenomena noted that directly or indirectly cause liver dysfunction are closely allied to lesions in the thoracic area.

Kirksville College of Osteopathy and Surgery

REFERENCES

1. Jordan, H. E.: Text book of histology. D. Appleton-Century Co., New York, 1940, p. 395.
2. Best, C. H., and Taylor, N. B.: Physiological basis of medical practice. Ed. 4. Williams & Wilkins Co., Baltimore, 1945, p. 286.
3. Ivy, A. C.: Cited by Best, C. H., and Taylor, N. B.: *Op. cit.*, ref. 2, p. 475.
4. Pottenger, F. M.: Symptoms of visceral disease. Ed. 6. C. V. Mosby Co., St. Louis, 1944, p. 67.
5. Best, C. H., and Taylor, N. B.: *Op. cit.*, ref. 2, p. 940.
6. Cannon, W. B.: Cited by Best, C. H., and Taylor, N. B.: *Op. cit.*, ref. 2, p. 943.
7. Best, C. H., and Taylor, N. B.: *Op. cit.*, ref. 2, pp. 514-515.
8. Boyd, W.: Textbook of pathology. Ed. 4. Lea & Febiger, Philadelphia, 1943, p. 527.
9. Cole, W. V.: Osteopathic lesion complex; effects of atlas lesion after six months. J. Am. Osteop. A. 47:399-403, April 1948.

PSYCHOSOMATIC PROBLEMS OF SURGICAL PRACTICE—KOOGLER

(Continued from page 240)

neurotic. It was hard for me to learn that a person may have *both* a psychoneurosis *and* organic pathology.

The second illustrates the "diagnosis by exclusion" method. Since laboratory study and laparotomy had failed to find the physical cause of the symptomatology, I had by exclusion mentally placed the condition in the category of functional disorders. By errors such as these I am learning both the wisdom of the psychosomatic approach and the folly of relying on anything except positive evidence in making a diagnosis.

CONCLUSIONS

This discussion has, I hope, served to emphasize a fact which has become increasingly apparent to me as I have gained in experience; namely, that a surgeon cannot divorce psychiatry from his practice. He must be sufficiently well grounded in psychiatry to recognize the mental and emotional factors in the symptom pictures which his patients present. He must also be able to handle the minor or run-of-the-mill problems of this nature in a capable manner. The discussion should also serve to illustrate the advantages of consultation with a psychiatrist in doubtful cases. Surgeons do not hesitate to ask the opinion of the pathologist when tissue which is suspected of being cancerous must be removed. Why, then, should they hesitate to call upon a psychiatrist to help identify psychopathology?

At the Kirksville College of Osteopathy and Surgery, I make it a practice to have psychiatric consultation whenever I have referred to me a patient in whom I see or suspect emotional imbalance, and I follow the psychiatrist's recommendations regarding the psychiatric phase of the problem. Consultations of this type add to the value of the service we can render the patient, help prevent diagnostic and operative errors, and enhance our prestige among the persons who have been or may become our patients.

Kirksville College of Osteopathy and Surgery

REFERENCES

1. Bennett, A. E.: Faulty management of psychiatric syndromes simulating organic disease. J. Am. M. A. 130:1208, April 27, 1946.
2. Martinet, A. R.: Clinical diagnosis; case examination and analysis of symptoms. F. A. Davis, Philadelphia, 1922, p. 34.
3. Alvarez, W. C.: When should one operate for "chronic appendicitis"? Study of 385 cases. J. Am. M. A. 114:1301-1306, April 6, 1940.
4. Albutt, T. C.: Cited by Weiss, E., and English, O. S.: Psychosomatic medicine. W. B. Saunders Co., Philadelphia, 1943, pp. 4-5.

SECOND ANNUAL PRIZE CONTEST OF ACADEMY OF APPLIED OSTEOPATHY

The Publication Committee of the Academy of Applied Osteopathy will award cash prizes of $100.00 for first prize, $75.00 for second prize, and $50.00 for third prize for the three best papers of not more than 2,500 words submitted by any junior or senior student in an osteopathic college on the following subject:

The Role of the Osteopathic Lesion in Functional and Organic Renal Pathology

RULES OF THE CONTEST

1. Any senior or junior student in any recognized osteopathic college may enter the contest.
2. Papers must be not more than 2,500 words in length and must be typewritten, double spaced, on one side of paper only.
3. Three copies must be submitted to the Chairman of the Publication Committee, Thomas L. Northup, D.O., Altamont Court Apts., Morristown, N. J., before April 1, 1949.

COMPLAINT AGAINST OREGON STATE MEDICAL SOCIETY

The Department of Justice has filed a complaint in the District Court of the United States for the District of Oregon against the Oregon State Medical Society and several other organizations and individuals. Whatever the outcome of the trial of the action may be, the charges themselves, in every paragraph, bear implications of the greatest importance, implications which will be apparent to the careful reader.

A close reading by every member of the whole instrument, is indicated. The complaint follows in full.

IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE DISTRICT OF OREGON

UNITED STATES OF AMERICA,
Plaintiff,
v.

Oregon State Medical Society	)	
Oregon Physicians' Service	)	
Clackamas County Medical Society	)	
Clatsop County Medical Society	)	
Columbia County Medical Society	)	
Douglas County Medical Society	)	Civil—4255
Jackson County Medical Society	)	
Lane County Medical Society	)	
Marion-Polk Counties Medical Society	)	
The Multnomah Medical Society	)	
W. W. Baum	)	
John Besson	)	
J. P. Brennan	)	
John H. Fitzgibbon	)	
Charles E. Hunt	)	
Gordon B. Leitch	)	
K. H. Martzloff	)	
E. H. McLean	)	

Defendants.

COMPLAINT

The United States of America, plaintiff, by its attorneys, acting under the direction of the Attorney General of the United States, complains and alleges on information and belief as follows.

I. JURISDICTION AND VENUE

1. This complaint is filed and these proceedings are instituted under section 4 of the Act of Congress of July 2, 1890, entitled "An Act to protect trade and commerce against unlawful restraints and monopolies," 26 Stat. 209, as amended, said Act being commonly known and hereinafter referred to as the Sherman Act, against the above-named defendants, in order to prevent and restrain further violations by them, as hereinafter alleged, of section 1 and 2 of said Act (15 U. S. C. sections 1, 2).

2. The unlawful monopolizing, attempts to monopolize, combinations and conspiracies to monopolize, and contracts, combinations, and conspiracies in restraint of trade and commerce among the several states, hereinafter described, have been conceived, carried out, and performed, and are being carried out and performed in part within the District of Oregon.

II. DEFENDANTS

3. Defendant, the Oregon State Medical Society is an unincorporated association, having its office and principal place of business in Portland, Oregon. It is affiliated with the American Medical Association.

4. Defendant, the Oregon Physicians' Service is a corporation incorporated under the laws of the State of Oregon and having its office and principal place of business in Portland, Oregon. The Oregon Physicians' Service furnishes prepaid medical, surgical, and hospital care on a prepaid contract basis. It is sponsored and approved by the Oregon State Medical Society and is controlled and operated by members of that society. It sponsors, approves, and cooperates with component county societies and organizations controlled by the latter which offer prepaid medical plans.

5. Defendant, Clackamas County Medical Society is an unincorporated Association, having its office and principal place of business in Oregon City, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

6. Defendant, Clatsop County Medical Society is an unincorporated association, having its office and principal place of business in Astoria, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

7. Defendant, Columbia County Medical Society is an unincorporated association, having its office and principal place of business in St. Helens, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

8. Defendant, Douglas County Medical Society is an unincorporated association, having its office and principal place of business in Roseburg, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

9. Defendant, the Jackson County Medical Society is an unincorporated association, having its office and principal place of business in Medford, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

10. Defendant, the Lane County Medical Society is an unincorporated association, having its office and principal place of business in Eugene, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

11. Defendant, the Marion-Polk Counties Medical Society is an unincorporated association having its office and principal place of business in Salem, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

12. Defendant, the Multnomah Medical Society is an unincorporated association having its office and principal place of business in Portland, Multnomah County, Oregon. It is affiliated with the Oregon State Medical Society and the American Medical Association.

13. Defendant, W. W. Baum is a doctor at Salem, Oregon. He is a member of the Oregon State Medical Society.

14. Defendant, John Besson is a doctor at Portland, Oregon. He is a member of the Oregon State Medical Society.

15. Defendant, J. P. Brennan is a doctor at Pendleton, Oregon. He has been an officer or director of one or more of defendant corporations or associations during all or part of the conspiracies hereinafter described.

16. Defendant, John H. Fitzgibbon is a doctor at Portland, Oregon. He has been an officer or director of one or more of the defendant corporations or associations during all or part of the conspiracy hereinafter described.

17. Defendant, Charles E. Hunt is a doctor at Eugene, Oregon. He has been an officer or director of one or more of the defendant corporations or associations during all or part of the conspiracy hereinafter described.

18. Defendant, Gordon B. Leitch is a doctor at Portland, Oregon. He has been an officer or director of one or more of the defendant corporations or associations during all or part of the conspiracy hereinafter described.

19. Defendant, K. H. Martzloff is a doctor at Portland, Oregon. He has been an officer or director of one or more of the defendant corporations or associations during all or part of the conspiracy.

20. Defendant, E. H. McLean is a doctor at Oregon City, Oregon. He has been an officer or director of one or more of the defendant corporations or associations during all or part of the conspiracy.

III. DEFINITIONS

21. Medical care as used herein includes medical, surgical, and dental treatment, hospital care, and allied services, including the furnishing of medicine and medical supplies.

22. Prepaid medical care plans are plans under which medical care is procured or paid for by organizations engaged in the business of issuing policies or contracts covering the cost of medical care to individuals or groups of individuals.

IV. NATURE OF TRADE AND COMMERCE

23. Various organizations are engaged in the business of supplying medical care to individuals, groups of individuals, and business concerns on a contract basis. Some of said organizations have their main offices in Oregon and carry on a substantial part of their business within that state.

24. Organizations with offices outside of Oregon offer to make and do make contracts with residents of Oregon for prepaid medical, surgical, and hospital care and allied services. In the absence of the restraints hereinafter described, the State of Oregon would constitute a substantial market for the prepaid medical care business of such organizations.

25. Organizations having their main offices in Oregon sell prepaid medical care policies in the states of Oregon, Washington, and California. Organizations doing prepaid medical insurance business in the State of Oregon use interstate transportation and transmission facilities to transmit across state lines policies, reports, instructions, and correspondence, and there is a regular flow of reports, communications, and commerce between said Oregon organizations and agents, doctors, and customers located in states other than Oregon. Medical care policies and payments thereon by policy holders regularly flow in interstate commerce between the State of Oregon and other states. Prepaid medical policies issued by Oregon organizations cover medical care required by Oregon residents while in other states. It is a part of the regular course of business of said Oregon organizations to arrange to pay for said medical care rendered by doctors, hospitals, and others in other states, or to provide policy holders in other states with transportation to Oregon for medical care. All of these transactions necessitate a regular course of business dealings between said Oregon organizations and individuals and organizations in other states. Business dealings across state lines are had between medically insured residents of Oregon and hospitals, doctors, and other persons located in states other than Oregon.

26. Organizations engaged in the sale and furnishing of prepaid medical care in Oregon are regularly engaged, as a part of said business, in the purchase and procurement of medicines, drugs, medical supplies, and instruments shipped from other states into the State of Oregon, and into other states; and said organizations cause the shipment from states other than Oregon of medicines, drugs, medical supplies, and instruments to doctors and purchasers other than said organizations in the State of Oregon, and other states.

27. Many industrial concerns located in Oregon are parties to, or but for the restraints hereinafter set forth would be parties to, contracts with organizations under which their employees secure prepaid medical care. Industrial concerns located in other states carry prepaid medical insurance for their employees with prepaid medical care organizations having their main offices in Oregon, and use Oregon medical care facilities for treatment of their employees. A substantial number of their employees reside in states other than Oregon.

28. Doctors practicing in Oregon treat patients who have come from other states to secure medical care in Oregon pursuant to prepaid medical care policies held by such patients. The facilities of hospitals located in Oregon are used by residents of other states who have come to Oregon for the purpose of using said facilities pursuant to the terms of their prepaid medical care policies. Similarly, doctors in other states treat patients coming from the State of Oregon, and hospitals in other states are used by residents of Oregon, pursuant to the terms of the prepaid medical care policies of those patients.

29. Medicines, drugs, medical supplies, and equipment continuously come into and go out of the State of Oregon as the result of medical care by Oregon doctors and hospitals under prepaid medical care plans. Medicines, drugs, medical supplies, and equipment are shipped into states other than Oregon by virtue of medical care provided by doctors and hospitals in Oregon under prepaid medical care plans.

30. Prepaid medical care organizations providing prepaid medical care in the State of Oregon cannot carry on their business without cooperation or participation of doctors and hospitals in Oregon. Unless doctors and hospitals in Oregon provide medical treatment to members of prepaid medical care programs and accept payment therefor from prepaid medical care organizations, performance of contracts for prepaid medical care is made impossible.

V. OFFENSES CHARGED

31. Beginning on or about January 1, 1936, and continuing thereafter up to and including the date of filing this complaint, the defendants have attempted to, and have been engaged in a combination and conspiracy to, restrain and monopolize interstate trade and commerce in the business of selling and furnishing prepaid medical care in the State of Oregon and in other states, in violation of Sec. 1 and 2 of the Sherman Act (15 U. S. C., Sections 1, 2). Defendants threaten to continue such offenses and will continue them unless the relief hereinafter prayed for in this complaint is granted.

32. The conspiracy has consisted of a continuing agreement and concert of action among the defendants, the substantial terms of which have been that defendants agree:

(a) To monopolize and attempt to monopolize prepaid medical care business in the State of Oregon and between the State of Oregon and other states.

(b) To limit the scope of medical care to be provided by prepaid medical care plans in the State of Oregon.

(c) To prevent, hinder, and obstruct prepaid medical care organizations other than those sponsored by defendants from continuing to engage in or from engaging in the business of selling and furnishing prepaid medical care in Oregon and in other states.

(d) To restrain residents of Oregon and other states from entering into or continuing under prepaid medical care plans not sponsored or supported by the defendants.

(e) To prevent doctors from cooperating in prepaid medical care plans not sponsored or approved by defendants.

(f) To restrict the use of hospital facilities by doctors cooperating in prepaid medical care plans other than those sponsored or approved by defendants.

(g) To prevent Oregon hospitals from allowing their facilities to be used by doctors and patients associated with prepaid medical care plans other than those sponsored or approved by defendants.

33. The combination and conspiracy hereinabove described and the intended restraints which have resulted therefrom have been effectuated in the following manner and by the following means:

(a) Defendants have hindered and obstructed prepaid medical care organizations in their attempts to procure and retain qualified doctors to cooperate with them.

(b) Defendants have expelled, threatened, and incited the expulsion from medical societies of doctors cooperating in prepaid medical care plans other than those sponsored or approved by the defendants.

(c) Defendants have formed and promoted their own prepaid medical care plans with the intent to drive out, hinder, and obstruct other commercial medical care plans operating in the State of Oregon.

(d) Defendants have interfered with commercial prepaid medical care organizations other than those sponsored or approved by them in obtaining hospital facilities for their members.

(e) Defendants have refused to treat patients and have caused others to refuse to treat patients who are members of a prepaid medical care plan not endorsed by defendants unless the patient pays cash.

(f) Defendants have refused and encouraged other doctors to refuse to give patients who are members of a prepaid medical care plan not endorsed by defendants itemized statements that will enable the patient to be reimbursed under the plan to which he has subscribed.

(g) Defendants have refused to consult or assist and have encouraged others not to consult or assist doctors who treat members of a prepaid medical care plan not endorsed by them.

(h) Defendants have spread false propaganda among doctors, hospitals, and the general public for the purpose of discrediting any prepaid medical care plans not endorsed by them.

(i) Defendants have agreed among themselves and with others not to compete with each other for prepaid medical care business or with other similar organizations approved by or affiliated with them.

(j) Defendants have succeeded in making hospital facilities in Oregon available only to members of defendant Oregon Medical Society and its component county medical societies, and have restricted and excluded other qualified doctors cooperating in prepaid medical plans other than those sponsored or approved by defendants from access to such facilities.

34. Each of the individual defendants has been active individually and as an officer or member of defendant associations or corporations in the violations herein alleged.

VI. EFFECTS OF VIOLATIONS

35. The following effects, among others, have resulted from the violations aforesaid:

(a) Prepaid medical care organizations other than those sponsored by the defendants have been prevented and hindered in entering into or expanding their business in Oregon. The business of such organizations outside the State of Oregon has been impeded and their ability to do business outside Oregon has been impaired.

(b) The public in and out of Oregon has been deprived of a fair and free opportunity to acquire medical care insurance from organizations competing with one another in a free market.

(c) Members of the public in and out of Oregon have been deprived of medical care, which, save for the restraints herein described, would have been afforded them.

(d) Business concerns in and out of Oregon have been deprived of the opportunity to obtain prepaid medical insurance for their employees in an unrestrained market, and their business within and outside the State of Oregon has been adversely affected thereby.

(e) Doctors have been deprived of an opportunity to practice medicine in Oregon on terms of their own choosing, pursuant to the laws of Oregon.

(f) Doctors in Oregon and outside of Oregon have been denied the use of hospital facilities in Oregon.

(g) Hospitals in Oregon have been denied the privilege of making their facilities available to doctors and members of the public.

(h) The market for the sale and distribution of medicines, drugs, medical supplies, and medical equipment has been unduly restricted.

VII. PRAYER

Wherefore plaintiff prays:

(1) That pursuant to Section 12 of the Clayton Act, an order be made and entered requiring such of the defendants as are not residing within this district to be brought before this Court in this proceeding as parties defendant, and directing the Marshals of the District in which they severally are inhabitants, or may be found, to serve summons upon them;

(2) That the combinations and conspiracies in restraint of interstate trade and commerce, together with the attempts to monopolize, conspiracy to monopolize, and monopolization of the same, hereinbefore described, be declared to be illegal and violative of the Sherman Act;

(3) That defendants be perpetually enjoined from further engaging in or carrying out said restraints and conspiracy, from doing any act in furtherance thereof, and from engaging in any similar conspiracy or course of conduct;

(4) That defendant medical societies be perpetually enjoined from refusing to take into their membership, and from expelling or threatening to expel from their membership, any doctor because of his cooperation in medical plans other than those sponsored or approved by the defendants;

(5) That defendant medical societies, upon application or request therefor by any such doctor, shall reinstate as a member in good standing any doctor who has been expelled from membership because of his cooperation in a medical care plan other than those sponsored or approved by the defendants;

(6) That defendants be perpetually enjoined from persuading or inducing or attempting to persuade or induce hospitals to discriminate in the use of their facilities against doctors or patients cooperating or associated with medical care plans other than those sponsored or approved by defendants;

(7) That defendants be perpetually enjoined from persuading or inducing, or attempting to persuade or induce doctors not to cooperate in medical care plans other than those sponsored by the defendants;

(8) That the defendants be perpetually enjoined from suggesting, advocating, or agreeing that doctors should refuse to treat patients who are associated with medical care plans other than those sponsored or approved by the defendants; or to discriminate against said patients with respect to fees charged for medical services; or discriminate against said patients by requiring them to pay cash for medical services; or refuse to supply itemized statements to said patients showing the medical services rendered and the fees charged therefor;

(9) That defendants be perpetually enjoined from the publication or dissemination of false or disparaging publicity concerning medical care plans other than those sponsored or approved by the defendants;

(10) That defendants be perpetually enjoined from advocating, inducing, or agreeing that doctors who are members of defendant medical societies should refuse to consult in the diagnosis, care, or treatment of patients of doctors cooperating in medical care plans other than those sponsored or approved by the defendants; or of doctors who are not members of defendant medical societies;

(11) That defendant medical associations be perpetually enjoined from refusing to give approval to any medical care plan on the ground that said plan is controlled or sponsored by a commercial organization; or that said plan provides for medical care of patients having incomes above any given amount; or that said plan would compete with one or more other medical care plans approved or sponsored by the defendants;

(12) That defendant medical societies be required to advise in writing all of their component county medical societies, and to publish a statement in *Northwest Medicine*, that it no longer be the policy of said medical societies to do those things which, as hereinbefore alleged, they have combined and conspired to do, specifically including those things which defendants are enjoined from doing;

(13) That the plaintiff have such other and further relief as the court may deem just and proper;

(14) That the plaintiff recover its costs.

PHILIP MARCUS
JAMES R. BROWNING
Special Assistants to the Attorney General

TOM C. CLARK
Attorney General

HERBERT A. BERGSON
Assistant Attorney General

HOLMES BALDRIDGE
Special Assistant to the Attorney General

Department of Professional Affairs

BENJAMIN F. ADAMS, D.O.
Chairman
West Hartford, Conn.

COUNCIL ON EDUCATION

ROBERT B. THOMAS, D.O.
Chairman
Huntington, W. Va.

The organization meeting of the Council on Education of the A.O.A. will be held at the Knickerbocker Hotel in Chicago February 3 and 4.

BUREAU OF PROFESSIONAL EDUCATION AND COLLEGES

R. McFARLANE TILLEY, D.O.
Chairman
Brooklyn, N. Y.

GRADUATE COURSES OFFERED

Kansas City College of Osteopathy and Surgery.—The thirteenth postgraduate course in Surgical Anatomy of the Head will be lengthened to a 10 day course which will be presented from March 10 to 19. Address the Dean, Mr. J. M. Peach, 2105 Independence Ave., Kansas City 1, Mo.

Kirksville College of Osteopathy and Surgery.—Three courses offered: Manipulative Therapeutics, January 24-29; Advanced Ophthalmology, January 24-February 12; Radiology, January 31-February 5. Address the Dean, M. D. Warner, D.O., Kirksville, Mo.

COMMITTEE ON SPECIAL MEMBERSHIP EFFORT

STEPHEN B. GIBBS, D.O.
Chairman
Coral Gables, Florida

MEMBERSHIP REPORT AS OF DECEMBER 1, 1948

Membership count, November 1, 1948	8,082
Applications received in November, 1948	14
Graduates licensed in November, 1948	8
	22
Deaths and Resignations in November, 1948	9
Gain in November, 1948	13
Membership count, December 1, 1948	8,095

HONOR ROLL

R. D. McCullough	Theodore L. Sharpe
Nathan Murphy	Ralph Thomas
Ira C. Rumney	Carleton E. Towne

Department of Public Affairs

VINCENT P. CARROLL, D.O.
Chairman
Laguna Beach, Calif.

BUREAU OF PUBLIC EDUCATION ON HEALTH

JOHN P. WOOD, D.O.
Chairman
Birmingham, Michigan

PUBLIC EDUCATION ON HEALTH CONFERENCE FEBRUARY 5, 6, 1949

The Public Education on Health Conference scheduled for January 29 and 30, 1949, has been postponed until Saturday and Sunday, February 5 and 6, one week later than originally scheduled. The meeting will convene at the Knickerbocker Hotel, the first meeting commencing at 10:00 a.m. on Saturday, February 5, and the last sesssion closing at 4:00 p.m. on Sunday, February 6.

Considerable interest has already been evidenced by members of the profession in the coming Public Education on Health Conference. This is evidently an indication that the profession, as well as the public generally, is becoming more and more aware of the problems facing the acquisition of adequate health care by all the people of this country. Public interest, particularly in the proposed compulsory national health insurance act, indicates most clearly that the providing of medical and surgical services is no longer a matter of concern solely to the professional physician, but has gone beyond the scope of the profession into the realm of public health problems, generally. Other matters of similar interest will be discussed at the Conference and their place in a program to provide the most effective means of furnishing complete health care will be examined.

FEDERAL COURT DECISION IN KANSAS OSTEOPATHIC CASE

On April 19, 1948, a three judge Fededal Court consisting of Judge Orrie L. Phillips, Judge Walter A. Huxman, and Judge Alfred P. Murrah, convened in Topeka, Kans., and for three and one-half days heard evidence regarding osteopathic education and practice. This trial resulted from a complaint filed by four osteopathic physicians licensed to practice in Kansas. They contended that the Kansas Osteopathic Act as interpreted by the Kansas Supreme Court and as enforced by the Governor and Attorney General of Kansas denied to them the right to practice their profession. This Act was enacted in 1913 and from that date until 1938 has been considered as granting to the osteopathic physicians of that state the right to use medicinal substances and operative surgery when deemed necessary and in the best interests of their patients. In 1938, however, the Kansas Supreme Court construed the Act as a limited one and denied that osteopathic physicians in Kansas could under the Act use drugs or operative surgery.

The opinion of the court received just recently denied the request for an injunction restraining the Governor and Attorney General from enforcing these restrictions and limitations upon the practice of osteopathic physicians in Kansas. The court held that the plaintiffs were not entitled to relief inasmuch as a procedure exists under the Medical Practice Act by which osteopathic colleges could be approved for complete practice under that Act and graduates of such approved osteopathic colleges thus become eligible to receive a license which would include the right to use drugs and operative surgery. The denial of the injunctive relief was thus based solely on a question of statutory construction and not upon the evidence presented at the trial. The court, however, was required to make findings of fact based upon the evidence. These findings were contrary to the best interests of the osteopathic profession and stated that the practice of osteopathy was in the main confined to manipulative therapy. The findings also held that the training and education received in an allopathic and osteopathic college differs only in emphasis, intensity and degree. This finding that the training and education in the colleges of the two schools of practice differs only to this extent substantiates the contention long held by the osteopathic profession that the difference between the two schools is one based upon the principles of practice rather than upon the therapeutics required by the two schools. The osteopathic profession has long contended that these basic principles, known as the osteopathic concept, require the use of all therapeutic agencies and technics. This allegation is not disturbed by the findings of the court. Inasmuch as the case brought up questions involving osteopathic education and practice and legal questions affecting the standard of medical care, interest in it was displayed not only by physicians but also by many lay groups.

A more complete analysis of the case will be made when its relation to the public health, generally, and its effect upon the practice of physicians in other states has been completed.

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D. C.

FEDERAL SECURITY AGENCY
Public Health Service
Washington, D. C.

ANNOUNCEMENT OF REGULAR CORPS EXAMINATION FOR MEDICAL OFFICERS (OSTEOPATHIC)
United States Public Health Service

A competitive examination for appointment of Medical Officers (osteopathic) in the Regular Corps of the United States Public Health Service will be held on May 3, 4, and 5, 1949.

The Regular Corps is a commissioned officer corps composed of members of various medical and scientific professions, appointed in appropriate professional categories such as medical, dental, nursing, engineering, pharmacy, etc., depending on training and experience.

Appointments will be made in the grades of Assistant Surgeon (1st Lt.), and Senior Assistant Surgeon (Captain). Appointments are permanent in nature and provide opportunities to qualified physicians for a lifetime career in clinical medicine, research, and public health.

Requirements: For appointment in the grade of *Assistant Surgeon,* the applicant must be a United States citizen, at least 21 years of age, and a graduate from a recognized school of osteopathy whose graduates are eligible for licensure to practice medicine or osteopathy in a majority of the States of the United States. Applicants for appointment in the grade of *Senior Assistant Surgeon,* in addition to the above requirements, must have a total of at least 10 years of educational training and professional experience subsequent to high school. (All commissioned officers are appointed to the general service and are subject to change of station.) Qualifying applicants will receive written professional tests, an oral interview, and a physical examination.

The professional written examination for the grade of Assistant Surgeon will cover the following subjects: (1) anatomy, physiology, biochemistry; (2) materia medica and therapeutics; (3) practice of medicine; (4) practice of surgery; (5) obstetrics and gynecology; (6) epidemiology and hygiene; (7) pathology and bacteriology. Senior Assistant Surgeons applicants will be examined on subjects 3, 4, 6, and 7 listed above.

Examinations will be held at points throughout the United States including Norfolk, New Orleans, San Francisco, Seattle, Chicago, Cleveland, Detroit, Boston, Memphis, Kirkwood (Missouri), Staten Island, Los Angeles, Lexington (Kentucky), Fort Worth, Kansas City (Missouri), Denver, and Atlanta.

Entrance pay for an Assistant Surgeon with dependents is $5,011 per annum; for Senior Assistant with dependents $5,551. These figures include the $1,200 annual additional pay received by medical officers as well as subsistence and rental allowance. Provisions are made for promotion at regular intervals up to and including the grade of Senior Surgeon (Lt. Col.) and for selection for promotion to the grade of Medical Director (Col.) at $9,751 per annum.

Extra benefits include a 5 per cent increase in base pay for every 3 years of service (time served in the past as a member of the armed forces is credited), disability retirement at three-fourths base pay, full medical care, retirement pension, 30 days annual leave, sick leave, and many of the usual privileges extended to members of the military forces.

Application forms and additional information may be obtained by writing to the:

Surgeon General
United States Public Health Service
Washington 25, D. C.

Attention: Division of Commissioned Officers

Completed applications must be received by April 1, 1949.

RESEARCH GRANTS

Mental Health.—Forty-two medical schools in the United States are to receive Federal funds totalling $1,498,333 for developing or expanding training in psychiatry for undergraduate medical students, according to an announcement by Oscar R. Ewing, Federal Security Administrator. The first funds will be made available for the school year 1949-50, and will be paid in annual allotments over a 3-year period.

Upon the recommendation of the National Advisory Mental Health Council, at its recent meeting in Washington on December 12 and 13, the Surgeon General of the Public Health Service, Dr. Leonard A. Scheele, approved the applications of the forty-two medical schools. The schools will be formally notified in the near future.

The size of each grant was determined by pro-rating the requirements of the school against the funds appropriated for the purpose under the National Mental Health Act.

Dr. Scheele has expressed the hope that all eligible schools would eventually be awarded grants for this development in undergraduate medical training. At the present time, the money is not available.

The program making psychiatric training available to undergraduate medical students was developed as a result of representations by health authorities that all physicians need to be familiar with the effect of the emotions on the general health of the individual. In addition, the family doctor, the heart specialist, the pediatrician—all doctors should be trained to recognize the signs of incipient mental disturbances.

Heart.—Since the recent establishment of the National Heart Institute in the Public Health Service, requests for federal support of vitally needed heart research work have totaled more than $36,000,000.

The grants requests envisage support for a broad attack upon the nation's leading cause of death. They were considered by members of the National Advisory Heart Council at a meeting held recently at Bethesda, Maryland. The Council is comprised of leaders in the medical sciences and public affairs, with Dr. Paul D. White of Boston as Executive Director.

The Council concluded that "implementation of the entire heart program on a sound fiscal basis is highly important." With regard to the major category of applications received, from fifty-one hospitals and medical schools for provision of necessary research laboratory facilities, the Council resolved that approximately $30,000,000 would be necessary for adequate execution of this aspect of the program on a 5 year basis. Further study of the grants applications for research facilities, pending final recommendation to the Surgeon General of the Public Health Service and prior to the Council's next meeting, was decided upon.

Also considered by the Council were applications for promising research investigations which were presented with recommendations of scientific study sections, composed of leading scientists throughout the nation, which act as advisors to the Council. The Council recommended tentatively, subject to its further review for final approval, requests in this category totalling approximately $3,000,000.

Applications from thirty-seven medical schools, for grants to improve and expand cardiovascular teaching were considered by the Council. The Council discussed the critical needs for this aspect of the heart program and strongly endorsed the principle of such support. It tentatively recommended approval of applications totalling approximately $1,350,000 in this group and decided that further study be made of the individual *grants applications* prior to the next council meeting. Dependent upon the study, final recommendations are to be made to the Surgeon General.

Applications for grants for control projects were also considered by the Council. These control projects are special "pilot" studies, preliminary to the development of statewide

and community heart disease control programs throughout the country. Funds are presently available, it was stated, only for this category of applications. The Council recommended approval of grants applications for approximately $200,000 for these special studies.

Other actions of the Council included:

Election of Surgeon General Leonard A. Scheele of the Public Health Service as chairman for a 2-year term.

Establishment of a continuing subcommittee on cardiovascular disease control with Dr. T. Duckett Jones, council member and medical director of the Helen Hay Whitney Foundation of New York, as chairman.

The Council voted to hold its next meeting in New Orleans, Louisiana, early in March, 1949.

DEATHS BY CAUSE

Of the total of 1,445,370 deaths recorded in the United States in 1947, 460,580, or 31.9 per cent, were due to diseases of the heart, the leading cause of death, according to figures released today by the National Office of Vital Statistics of the Public Health Service, Federal Security Agency. This represents an increase of 31,350 over the number of deaths from heart disease in 1946.

Deaths from other chronic diseases associated with advanced age also increased between 1946 and 1947. In 1947 there were 189,811 deaths from cancer and other malignant tumors, or 7,806 more than in 1946, 131,039 deaths from intracranial lesions of vascular origin, or 5,393 more than in 1946, and 37,515 deaths from diabetes mellitus, or 2,784 more than in 1946. However, deaths from nephritis decreased; 80,288 deaths from this cause were recorded in 1947, or 1,413 fewer than in the previous year.

Mortality from the major infectious diseases set new record lows in 1947. The number of deaths from pneumonia and influenza (combined) decreased from 62,324 in 1946 to 61,836 in 1947, and deaths from tuberculosis decreased from 50,911 to 48,064 in this period.

Mortality from two of the communicable diseases of childhood dropped sharply in 1947 following increases to relatively high levels in 1946. The number of deaths in 1947 from poliomyelitis and polioencephalitis (580) and measles (472) were the third and second lowest, respectively, ever recorded for the United States. However, the number of deaths from whooping cough rose from the record low of 1,241 in 1946 to 1,954 deaths in 1947.

There were 32,697 deaths from motor-vehicle accidents in 1947 as compared with 33,411 in 1946. This was the first decrease in the annual number of deaths from this cause to be recorded since 1943. However, the number of deaths from other types of accidents rose from 64,622 in 1946 to 66,882 in 1947.

Fewer maternal deaths (associated with pregnancy, childbirth, and the puerperium) occurred in 1947 (4,978) than in 1946 (5,153) despite the large increase in the number of births during this period.

The number of deaths and death rates for selected causes in the United States in 1946 and 1947 are shown in the following table.

NUMBER OF DEATHS AND DEATH RATES FOR SELECTED CAUSES: UNITED STATES, 1946 and 1947

(Exclusive of stillbirths and of deaths among armed forces overseas. Rates per 100,000 estimated total midyear population excluding armed forces overseas.)

CAUSE OF DEATH	NUMBER		RATE	
	1947	1946	1947	1946
All causes	1,445,370	1,395,617	1007.8	997.6
Typhoid and paratyphoid fever	325	407	0.2	0.3
Cerebrospinal (meningococcus) meningitis	917	1,257	0.6	0.9
Scarlet Fever	197	198	0.1	0.1
Whooping cough	1,954	1,241	1.4	0.9
Diphtheria	799	1,259	0.6	0.9
Tuberculosis (all forms)	48,064	50,911	33.5	36.4
Dysentery	869	952	0.6	0.7
Malaria	214	341	0.1	0.2
Syphilis	12,671	12,955	8.8	9.3
Measles	472	1,310	0.3	0.9
Poliomyelitis, polioencephalitis (acute)	580	1,845	0.4	1.3
Cancer and other malignant tumors	189,811	182,005	132.4	130.1
Acute rheumatic fever	1,024	1,118	0.7	0.8
Diabetes mellitus	37,515	34,731	26.2	24.8
Pellagra (except alcoholic)	728	824	0.5	0.6
Intracranial lesions of vascular origin	131,039	125,646	91.4	89.8
Diseases of the heart	460,580	429,230	321.2	306.8
Pneumonia (all forms) and influenza	61,836	62,324	43.1	44.5
Diarrhea, enteritis, and ulceration of the intestines	8,069	8,090	5.6	5.8
Nephritis	80,288	81,701	56.0	58.4
Diseases of pregnancy, childbirth, and the puerperium	4,978	5,153	3.5	3.7
Congenital malformations and diseases peculiar to first year (except premature birth)	44,570	39,663	31.1	28.4
Premature birth	41,053	39,824	28.6	28.5
Suicide	16,538	16,152	11.5	11.5
Homicide	8,555	8,784	6.0	6.3
Motor-vehicle accidents	32,697	33,411	22.8	23.9
Other accidents	66,882	64,622	46.6	46.2
Senility, ill-defined and unknown causes	27,556	27,607	19.2	19.7
All other causes	164,679	162,076	114.8	115.9

Current Medical Literature

TREATMENT OF PAINFUL DISORDERS OF SKELETAL MUSCLE

Treatment of painful disorders of skeletal muscles is a subject in which all members of the osteopathic profession should be vitally interested. It was discussed at one of the regular Conferences on Therapy held by the members of the Department of Pharmacology and Medicine of Cornell University Medical College and New York Hospital. The Conference was reported in the *New York State Journal of Medicine*, September 15, 1948, pages 2050-2059. These discussions of painful disorders of skeletal muscle make a contribution to their analysis which should be studied in the original by every osteopathic physician.

Janet Travell, M.D., who has for many years been a pioneer in the study of these disorders, opens the discussion with a clear-cut analysis of the group of patients to be considered. They are those who are mainly suffering from a loss of activity due to pain in the skeletal musculature. She analyzes the cases in the following manner. First, she states that the pain is usually accompanied with restriction of motion of one or more joints. She discusses the fact, which is known to most of us, that in a large number of these cases there are areas of deep tenderness in one or more of the muscles about the joint which exhibits limitation of motion. It is interesting to note that she states that signs of acute inflammation such as redness, heat, and swelling are absent. This, unfortunately, is not a particularly accurate description. It is true that *outward* signs of redness, heat and swelling are usually lacking in these disorders, but according to the work of Louisa Burns, these changes occur deep in the tissues surrounding the joints involved. Dr. Travell also describes the changing contour around the joint, which is probably due to spasm of the muscles or a portion of the muscle. These changes in contour are often mistaken for true tissue exudation, but this, in her opinion, rarely occurs.

In carrying the discussion further, Dr. Travell states that these patients rarely exhibit any *demonstrable* disease. The syndromes are usually referred to as stiff neck, painful or frozen shoulders, tennis elbow, lumbago, sciatica, painful knees, etc. She makes a point of the fact that these terms are in no way indicative of any special etiological factor. She criticizes orthodox treatment because there is little relation to the etiological background. As osteopathic physicians, it is very interesting for us to note how thoughtful members of the older school of medicine are coming closer and closer to the fundamental facts which were discovered many years ago by Andrew Taylor Still.

In the listing of etiological factors, Dr. Travell mentions the fact that trauma is probably a foremost cause. However, she emphasizes, in particular, the cases where no apparent acute trauma has been the predisposing factor. The fact that chronic muscular strain over long periods of time is associated

with inefficient muscular movements and thus causes painful disorders in the skeletal muscles is ably described.

The third precipitating factor which is mentioned in this article as a cause of muscular pain is the chilling of the body as a whole or the cooling of a specific area. Those of us in general practice know only too well how true this is. A very interesting statement made in this connection is that "Pain is apparently more apt to result from chilling when a person is fatigued." This coincides with the observations made by Perrin T. Wilson, D.O., particularly with reference to chilling and fatigue as contributing factors in the etiology of poliomyelitis.

An important cause of skeletal muscular pain which all of us are prone to forget is that visceral disease may cause painful spasms of voluntary muscles. Other etiological factors which are mentioned include muscle spasm due to neurogenic causes such as herniated intervertebral disk, painful cramps of peripheral neuritis such as noted in vitamin B deficiency, pains due to toxins of acute and chronic infections, and other less common structural and metabolic irritations. It is regrettable, that in this very complete survey, no mention is made of the fact that spasm and inflammatory changes which are due to chronic stress and strain around paravertebral structures may also in themselves be the cause of many so-called "visceral syndromes."

The observation is made that a large proportion of patients with chronic muscular pain have low metabolic rates of the order of minus 15 to 20 per cent. This, of course, brings to mind the work of Alexander Levitt, D.O., who has described so vividly the syndrome of hypothyroidea, hypercholesteremia, and vagotonia. Certainly this may be an important factor to be considered in the prevention of many skeletal musculature disorders.

The discussion of treatment, although more or less allopathic in its concept, still utilizes many principles of the osteopathic school of medicine. Dr. Travell's main point in the discussion of treatment concerns the location and infiltration of so-called trigger areas. She states, "The presence of a trigger area within a muscle is demonstrated by the fact that when pressure is exerted on it, or a needle inserted into it (which also exerts pressure), a spread of pain is clearly perceived by the patient in its specific reference zone. In other words, that spot is positively identified as the source of the pain felt at a distance. The reference zone, which can be mapped in this way by mechanical stimulation of the trigger area, should coincide with the region where the patient complains of spontaneous pain. If it does match, one may be sure that at least one of the sources of pain has been found."

For the local infiltration, 0.25 to 0.5 per cent solution of procaine hydrochloride in physiologic saline is used. The solution does not contain epinephrine. One factor which few recognize is that the main purpose for the use of procaine in this procedure is to render it painless. Simple "needling" or the use of normal saline will often produce the same results as when procaine is used. No satisfactory evidence has been produced which proves that the anesthetic agent has any greater therapeutic efficacy than physiologic saline. Also it is interesting to note that the abnormal state known as a trigger area has never been reproduced experimentally. It is not unreasonable to speculate concerning the relation of these trigger areas and some of the so-called reflexes described by Chapman and others. A study should be made of this possible relation.

Another therapeutic method described by Dr. Travell is the spraying of the trigger area with ethyl chloride; this and the use of graded exercises, external heat, and other such methods are adequately described.

One thing which stands out in the discussion is the rather minute mention of manipulative procedures. Yet, it might be well for osteopathic physicians to examine this article in the light of the osteopathic concept. Time and time again the authors imply the importance of the mechanical factor in etiology, yet little is said concerning its place in the therapeutic regime. The "what" of treatment is well amplified —but the "why" is not so well integrated. We are told how to block muscle spasm and contractures but a discussion of "why" the muscle spasm occurs is not forthcoming. Mention is made of curare and its dangers are described. Active and passive stretching of muscles is discussed but little is said about why the muscles are in the condition that necessitates stretching. However, one significant statement is made in this regard by Dr. Harold G. Wolff. He says, "There must be another factor besides shortening of the muscles, perhaps a circulatory derangement as well, or possibly the elaboration of a chemical agent which has threshold lowering properties."

It is interesting to note that ammonium chloride by mouth has often been found to be of use. It is given with the idea of reducing tissue edema. The factor of edema of the involved tissues has long been known to exist. However, here again we are dealing with results rather than causes.

This Conference on Therapy is excellent. The reviewer holds that view even while recognizing that the discussants have completely failed to comprehend the value and importance of the osteopathic lesion. However, as this article shows, they are beginning to see "the light."

To us as members of the dominant school of medicine in the field of manipulative therapy, articles such as the one here reviewed are of extreme importance. We must maintain our leadership in this work, but that will be accomplished only by the careful integration of the related work of all scientific workers. Our task must be one of integration and confirmation of facts which further establish the osteopathic philosophy of disease. The article by Dr. Travell *et al* is an article which should be read in the original. The time consumed will be time well spent.

GEORGE W. NORTHUP, D.O.

THE FETAL HEMODYNAMOGRAM

A simple graphic method for rapid visualization of circulatory defects has been evolved by Harold W. Bischoff, M.D., and others and was described by them in the *Journal of Pediatrics* for October, 1948.

The new approach is a line diagram arbitrarily called the hemodynamogram, and is applied to descriptions of the fetal circulation, the normal infant circulation, and the abnormal circulation. For simplification, the authors have utilized the line drawing in the shape of a figure-of-eight, showing the flow of blood as a continuous process, but making clear the two portions, pulmonary and systemic. The former is labeled Cycle "A," and the latter Cycle "B." Clear labels and arrows indicate the flow of the blood.

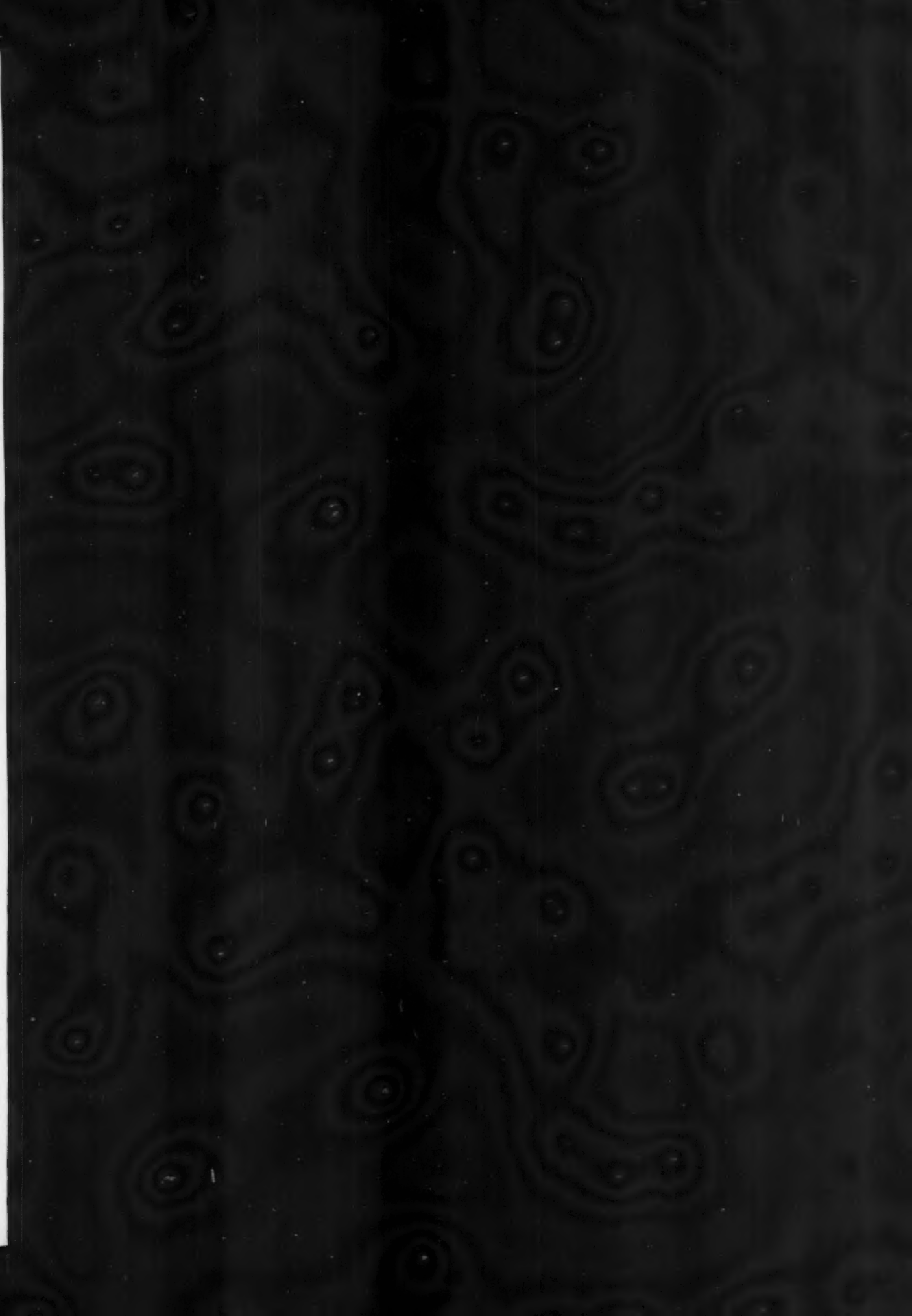
For example, the normal hemodynamogram shows a flow of blood in a continuous stream from the left auricle through the left ventricle, aorta, arterial systemic circulation, venous systemic circulation, venae cavae, right auricle, right ventricle, pulmonary artery, lungs, pulmonary veins, and back to the left auricle.

The fetal hemodynamogram adds hypogastric arteries and ductus venosus to show the flow in and out of the umbilical vessels, an arrow indicating the shunt of blood from the right auricle to the left auricle through the foramen ovale, and one showing the ductus arteriosus carrying blood from the pulmonary artery to the aorta.

In similar diagrams, a number of abnormal situations found by the authors at autopsies are simply depicted, but all are based on schematic line drawings with two cycles making up a continuous blood flow.

ARNOLD MELNICK, D.O.

THE ALARM REACTION AND THE DISEASES OF ADAPTATION

Writing in the *Annals of Internal Medicine*, September, 1948, Hans Selye summarizes the general-adaptation-syndrome concept and presents some observations upon which the concept is based. Selye has observed that the organism responds to systemic stress by what he terms a general-adaptation-syndrome whose manifestations are essentially independent of the specific nature of the stress employed and depend mainly upon the degree and duration of the exposure. The syndrome

(Continued on page 275)